

WORLD NEURON CONGRESS

November 26-27, 2018 Helsinki, Finland

Changers in structure of neurons of Central Nervous System on different experimental models of demyelination and remyelination

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In experimental work was investigating morphological changers of neurons in organs of central nervous system (CNS) in different experimental models of demyelination and remyelination. After induction of demyelination - EAE (experimental allergic encephalomyelitis) - in rats, was investigate of changers of neurons in cortex of cerebrum, cerebellum and spinal cord on 21 days and 39 days. We observed the percentage of neurons with unmodified, moderate and severe structural changes after staining of histological sections of the brain and spinal cord by toluidine blue and cresyl violet. We studied of demyelination process of nervous fibers in organs of CNS by the methods of electron microscopy and morphometry. We observed of remyelination process - the percentage of normal neurons in the brain and spinal cord was increased, the amounts of neurons with severe and destructive changes were reduce after influence of Rebif® (interferon beta-1a) by 1 and 2 weeks, and myelinated nerve fibers was regenerate. After induction of demyelination - cuprizone model - in the 129/Sv mice, at 3-5 and 16-17 months of age we observed changers in structure of neurons and nerve fibers. Cuprizone was provide daily for 3 weeks, in result, was form demyelination process in CNS. RhLIF was inject after 7-days cuprizone diet, one administration daily, 50 µg/kg, the hormone of melatonin was provide daily. In the cuprizone-treated mice of both age groups, the percentage of neurons with severe changes in the brain and spinal cord was increased and after rhLIF and melatonin, the amounts of neurons with destructive changes were reduce, was less pronounce in aged mice. RhLIF and melatonin may be a perspective neuroprotective drugs.

Biography

Nataliia O Melnyk - the Professor of the Histology and Embryology Department of National O.O. Bogomolets Medical University, the Main Scientist in the Institute of Genetic and Regenerative Medicine National Academy of Medical Sciences of Ukraine, Kyiv. Graduated from Kyiv National Taras Shevchenko University in 1993, after an assignment she worked as an engineer in the Institute of Molecular Biology and Genetics. During 2008- 2011, she worked as Deputy Head of the Department of Education and Methodology of the National O.O. Bogomolets Medical University. She has more than 340 scientific and methodological works, 5 patents of scientific research. Nataliia Melnyk was edited base textbook of Histology, Cytology and Embryology for students of medical universities in Ukraine.

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