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Cuprizone-dependent reactive changers of Central Nervous System in the mice and their Improvement by Cytokine

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In this experimental work aimed at investigation of morphological changers in organs of central nervous system (CNS) and neuroprotective effects of recombinant human leukemia inhibitory factor (rhLIF) on mice of different ages with cuprizone model of demyelination. In the 129/Sv mice at 3-5 and 16-17 months of age, we assessed motor and emotional activity, brain antioxidant enzymes, T-lymphocytes and macrophages. After staining of histological sections of the brain and spinal cord in toluidin blue, we determined the percentage of neurons with unmodified, moderate and severe structural changes. We studied changers of nervous fibers of organs of CNS after used methods of electron microscopy and morphometry. Cuprizone was provide daily for 3 weeks. RhLIF was injected after 7-days cuprizone diet, one administration daily, 50 µg/kg. Cuprizone decreased the amounts of crossed squares and faecal boluses in the mice of both age groups. RhLIF restored emotional activity in these mice, but more in young mice. 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 rhLIF the amounts of neurons with destructive changes were reduced, being less pronounced in aged mice. In the brain of cuprizone-treated mice of both age groups, the activity of catalase and glutathione peroxidase inhibits. The percentage of T-lymphocytes and active macrophages was increased in cuprizone-treated mice of both age groups. Decrease of amount and activity of macrophages after injections of the rhLIF was observed. LIF may be a perspective neuroprotective drug.

Speaker Biography

Nataliia O Melnyk is the Professor of the Histology and Embryology Department of National O.O.Bogomolets Medical University, the Leading Research Scientist of the Experimental Modeling Laboratory at the State 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 270 scientific and methodological works, 5 patents of scientific research.

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