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Reactive cuprizone-induced changes in neurons of central nervous system, behavioral reactions and its recovering after influence of leukemia inhibitory factor in mice of different agesMelnyk Nataliia O^{1,2}, Labunets I F¹, Rodnichenko A E¹, Rymar S E¹ and Utko N A¹¹State Institute of Genetic and Regenerative Medicine - NAMS, Ukraine²O O Bogomolets National Medical University, Ukraine

Statement of the Problem: Investigation work was aimed at studying the features of neuroprotective effects of recombinant human leukemia inhibitory factor (rhLIF) on mice of different ages with cuprizone model of demyelination.

Methodology & Theoretical Orientation: In 129/Sv mice at 3-5 and 16-17 months of age, after staining histological sections of brain and spinal cord toluidin blue, were determined the percentage of neurons with unmodified, moderate and severe structural changes. Motor and emotional activity in "open field" test, activity of brain antioxidant enzymes and macrophages capable to phagocytosis of latex beads were assessed. Cuprizone was fed daily for 3 weeks. RhLIF injected after 7 days cuprizone diet, daily, 50 µg/kg. In cuprizone-treated mice of both age groups, increase in the brain and spinal cord proportions neurons with severe changes was observed.

Findings: In young animals, which received cuprizone and rhLIF reduces the amount of neurons with destructive changes. Such changes under influence of rhLIF are slowly observed in older mice. Cuprizone decreases the amount of crossed squares and faecal boluses in mice of both age groups. Inhibition amount and activity of macrophages after injections of the rhLIF presents only for older mice. LIF may be perspective neuroprotective drug in multiple sclerosis. The injections of rhLIF restore emotional activity in these mice, but the increase in motor activity is observed only in young mice. In brain of cuprizone-treated mice of different ages inhibited the activity of catalase and glutathione peroxidase (GP); changes were more pronounced in older mice. The positive effect of rhLIF on GP activity appears only in young mice. Percentage of active macrophages increases in cuprizone-treated mice of both age groups, but their activity is only in 16-17 month-old mice.

Biography

Melnyk Nataliia O was investigating demyelination and remyelination process in central nerve system in experiment animals (in rats and mice). She studied structural changes in organs central and peripheral immune system in demyelination condition. She has 262 scientific works (4 patents) and is working in National O O Bogomolets Medical University where she provides lecture courses in Histology, Cytology and Embryology. She has prepared and edited textbook, "Histology, Cytology, Embryology".

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