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OC-089 - (23922) - THE ROLE OF THE APELINERGIC SYSTEM IN MEMORY IMPAIRMENT AND RECOVERY IN THE CUPRIZONE MODEL

L. Gaydarski (Bulgaria)[1]; K. Petrova (Bulgaria)[1]; N. Stamenov (Bulgaria)[1]; A. Iliev (Bulgaria)[1]; S. Stanchev (Bulgaria)[1]; P. Rashev (Bulgaria)[2]; M. Mourdjeva (Bulgaria)[2]; I. Kostadinova (Bulgaria)[3]; B. Landzhov (Bulgaria)[1]

1 - Department of Anatomy, Histology and Embryology Medical University-Sofia; 2 - Institute of Biology and Immunology of Reproduction, Bulgarian Academy of Sciences; 3 - Department of Pharmacology, Pharmacotherapy and Toxicology, Medical University-Sofia

Lyubomir Gaydarski
Sofia

Kristina Petrova
Sofia

Nikola Stamenov
Sofia

Alexandar Iliev
Sofia

Stancho Stanchev
Sofia

Pavel Rashev
Sofia

Milena Mourdjeva
Sofia

Ivanka Kostadinova
Sofia

Boycho Landzhov
Sofia

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Multiple sclerosis (MS) is a chronic, inflammatory, demyelinating, and neurodegenerative disorder that often impairs memory. The hippocampus plays a critical role in memory processing, and its dysfunction is a key factor in MS-related cognitive decline. The apelinergic system, which includes the apelin receptor (APLNR) and its ligands, is implicated in neurogenesis and may influence neurodegenerative processes. The cuprizone model, induces demyelination followed by remyelination.

Thirty 8-week-old C57BL/6 mice were divided equally into three groups: a control group receiving water, demyelination group administered 0.2% cuprizone in drinking water for five weeks, and a remyelination group that, after five weeks of cuprizone exposure, was given regular water for an additional five weeks. Immunohistochemicall, immunofluorescence and confocal microscopy were utilized to assess the expression of APLNR and NG2-positive cells in hippocampal regions. Memory performance was evaluated using a passive avoidance test. Data were analyzed using one-way ANOVA with Tukey's HSD post hoc test with a $p \leq 0.05$ considered statistically significant.

Significant differences were observed among the experimental groups. The demyelination phase was associated with altered APLNR, NG2 immunoreactivity, and marked memory deficits. In contrast, the remyelination phase demonstrated substantial recovery in both molecular markers and cognitive function, nearing their levels in the control group.

The study underscores the role of the apelinergic system and oligodendrocyte progenitor cells in MS-related memory impairments. Alterations in APLNR expression and NG2-positive cell distribution in the hippocampus correlate with cognitive decline during demyelination and recovery during remyelination, highlighting potential therapeutic targets for ameliorating memory deficits in MS.

Palavras-chave : apelin receptor, multiple sclerosis, memory