P-380 - SPATIAL COGNITION IN NOGO-A-DEFICIENT TRANSGENIC RATS AS AN ANIMAL MODEL: EFFECTS OF AGEING AND BEHAVIORAL CONDITIONS

A.Stuchlik[1], T.Petrasek[1], Z.Kristofikova[2], M.Vrajova[2], I.Prokopova[1], S.Berger[3], K.Schonig[3], D.Bartsch[3], K.Vales[1], D.Ripova[2]

[1]Institute of Physiology AS CR, [2]Prague Psychiatric Center, Prague, Czech Republic, [3]Central Institute of Mental Health, Mannheim, Germany

Introduction: Research into mechanisms of interaction between growth and inhibitory proteins of the CNS and behavioral expressions of healthy and disordered brain is one of the contemporary topics. A knockdown model with decreased expression of Nogo-A protein in neurons was developed on the genetic background of Sprague-Dawley wildtypes. Disruption of this inhibitory factor was hypothesized to result in behavioral abnormalities, which were studied both in young, middle age (6 months) and aged (12 months) rats.
Methods: Animals were tested in a battery of Carousel maze variants with various demands for segregation of spatial information and flexibility; animals avoided an unmarked sector of either stable or rotating arena; moreover the sector could be defined in room- or arena-frame. A shortened Carousel maze battery and Morris water maze (MWM) including one- trial matching-to-place and reversal configurations was used.
Results: Nogo-A-deficient rats were impaired in the final phases of the Carousel maze battery but their spatial working memory tested in the MWM was intact. Middle-aged and aged groups were differently affected in the battery, but deficits in young animals were observed not to be worsened with ageing. Concept of multidirectional age-related alterations in this animal model is further supported by biochemical brain changes.
Conclusion: Nogo-A-deficient rats may serve as an extremely useful model of neurodevelopmental deficit, which may manifest by behavioral changes accessible to phenotyping and in-depth analysis. Relevance of this approach for animal models of neuropsychiatric models will be discussed. Supported by GACR (309/09/0286, P303/10/J032 and 309/09/H072), by MSMT (LC554 and 1M0517).

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