ASSESSMENT OF FUNCTIONAL SEQUELS OF NEUROFIBRILLARY BRAINSTEM CHANGES IN THE PR5 MOUSE

N. Moser¹, B. Dengler¹, C. Köhler¹, J. Goetz², H. Schroeder¹, S.S. Arndt³

¹Anatomy II - Neuroanatomy - Univ. of Cologne, Cologne, Germany, ²Brain and Mind Research Institute, University of Sydney, Sydney, NSW, Australia, ³Department of Animals, Science & Society, Utrecht University, Utrecht, The Netherlands

Introduction: Neurofibrillary changes in the brainstem have gained increasing scientific and medical interest. Today it is known that brainstem nuclei like e.g. the lateral vestibular nucleus, the reticular formation, the raphe nuclei or the spinal trigeminal nucleus show an infestation with neurofibrillary tangles in Alzheimer's disease. Although in the case of the vestibular nuclei a clinicopathological correlation may be seen with the clinically well-documented gait disturbances a direct investigation of the functional consequences of the neurofibrillary pathology of brain stem nuclei is not possible in humans. Here, the use of transgenic animal models may be helpful.

Aims: We investigated pR5 mice, an established model of tauopathy. The distribution of hyperphosphorylated tau in the brainstem of pR5 mice shows a partial overlap with the distribution observed in Alzheimer patients. In addition to the above mentioned nuclei, pR5 mice display hyperphosphorylated tau in the trigeminal motor and principal sensory nuclei, the external cuneate nucleus and the pontine nuclei while the cerebellum is free of changes.

Methods: We are currently performing a longitudinal immunohistochemical study investigating the brains of pR5 mice at the age of 6, 15 and 18 months for the presence of neurons displaying hyperphosphorylated tau. To assess whether these findings can be correlated with functional disturbances the animals undergo a battery of tests. To test for the vestibular nuclei e.g. pR5 mice underwent Rotarod testing and righting reflex as compared to age-matched wild type animals.

Results/conclusion: We will report on the first findings of this test series.