EFFECT OF HYPERTENSION ON CEREBROVASCULAR AUTOREGULATION IN MURINE MODELS OF AD AND VASCULAR DEMENTIA

T.S. Wijasa¹, C. Capone¹, V. Zerbi¹, A. Heerschap², J.A. Claassen³, A.J. Kiliaan¹

¹Dept of Anatomy and Dept of Cognitive Neuroscience Donders Institute for Brain, Cognition, and Behavior Centre for Neuroscience, ²Dept. of Radiology, ³Dept of Geriatric Medicine, Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands

Introduction: Hypertension is a risk factor for cardiovascular diseases and dementia. Chronic high blood pressure impairs many regulatory mechanisms in the cerebral circulation. In particular, autoregulation is greatly affected and the ensuing defect is potentially cause of hypoperfusion and cerebral ischemia.

Aims: The aim of this study is to evaluate whether lowering the blood pressure in a mouse model of AD and in a mouse model of atherosclerosis (ApoE null) will affect cerebral perfusion in the cortical and thalamic regions leading to infarcts, white matter lesions, microbleeds.

Methods: 10 month old male C57Bl/6, APP/PS1 as model of AD, ApoE null mice as model of atherosclerosis will receive subcutaneously AngII (500ng/Kg/min) or saline through osmotic minipumps for two months. After four weeks some mice will receive a diuretic (Hydrochlorothiazide 7.5mg/Kg in drinking water) or an AT-1R inhibitor (Eprosartan mesylate 0.35mg/Kg in drinking water). Blood pressure is monitored daily through tail cuff plethysmography. CBF is measured at the end of the study through a 11.7 T Clinscan in the thalamic and hippocampal region with continuous arterial spin labeling. Brains are collected and processed to visualize ischemic damages through immunohistochemistry.

Results: The experiments are currently being performed and the results will be shown.

Conclusions: Results from this study will have potentially a great impact on clinical studies because they will allow to increase the knowledge on the relationship between high blood pressure, cerebral perfusion and development of AD and dementia.