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Chronic Cerebral Hypoperfusion accelerates Alzheimer's Disease pathology with Cerebrovascular Remodeling in a novel mouse model

rapidly progressing aging society has raised attention to Awhite matter lesions in Alzheimer's disease. Such an aging societies have shown an increasingly strong relationship between Alzheimer's disease (AD) and chronic cerebral hypoperfusion (HP). In the present study, we created a new mouse model for AD with HP, and investigated its clinical and pathological characteristics. Alzheimer's disease transgenic mice (APP23) were subjected to bilateral common carotid arteries stenosis with ameroid constrictors for slowly progressive cerebral HP. In contrast to simple APP23 mice, cerebral HP exacerbated motor and cognitive dysfunctions with white matter lesions and meningo-parenchymal amyloid- β (A β) burdens. Strong cerebrovascular inflammation and severe amyloid angiopathy with cerebrovascular remodeling were also observed in APP23 + HP mouse brains. Compared with the wild type and simple APP23 mice, APP23 + HP mice showed a progressive loss of MAG and NF186 from 6 to 12 months, broken misdistribution of

MBP, and extended relocation of Nav1.6 and AnkG beyond the primary nodal region in the corpus callosum. The present study demonstrates that chronic cerebral HP enhanced cognitive/ motor dysfunctions with parenchymal/cerebrovascular A β accumulation and cerebro- vascular remodeling, and that cerebral HP strongly disrupted white matter integrity (WMI) at intermodal, paranodal, and Ranvier's nodal sites which may be associated with cognitive decline.

Speaker Biography

Koji Abe is chairman of Neurology at Okayama University Medical School in Japan. He graduated Tohoku University School of Medicine (M.D.) and then got PhD title from Tohoku University under the direction of Prof. Kyuya Kogure. He published more than 600 papers on cerebral blood flow and metabolism and neurodegenerative diseases. He is the past president of the International Society of Cerebral Blood Flow and Metabolism (CBFM) and organized World CBFM meeting in Osaka in 2007 and Japan-Asia CBFM meeting Okayama city in 2014. He is currently serving Presidents of both Vas-Cog Japan and Vas-Cog Asia societies.

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