

Oral presentation

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Cognitive deficits in Alzheimer disease: a role for vascular function?

Constantin Bouras

Address: Division of Neuropsychiatry, HUG, Belle-Idte, Geneva
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The presence of microvascular changes has been documented both in brain aging and Alzheimer's disease (AD), although the relationship between the morphometry of brain capillaries and cognitive impairment is still unknown. We performed an analysis of capillary morphometric parameters and AD-related pathology in 19 elderly individuals with variable degrees of cognitive decline. Cognitive status was assessed prospectively using the Clinical Dementia Rating (CDR) scale. Total capillary lengths and numbers as well as mean length-weighted diameters, total NFT and neuron numbers and amyloid volume were estimated in entorhinal cortex and CA1 field. Total capillary numbers and mean diameters explained almost 40% of the neuron number variability in both the CA1 and entorhinal cortex. Total capillary length and numbers in the CA1 and entorhinal cortex did not predict cognitive status. Mean capillary diameters in the CA1 and entorhinal cortex were significantly related to CDR scores, explaining 18.5% and 31.1% of the cognitive variability, respectively. This relationship persisted after controlling for NFT and neuron numbers in multivariate regression models. Consistent with the growing interest about microvascular pathology in brain aging, the present data indicate that changes in capillary morphometric parameters may represent independent predictors of AD-related neuronal depletion and cognitive decline.