

Vascular Dementia: revealing the detrimental synergy between hypertension, micro-strokes and Neuro-Vascular Decoupling

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Name of Fellow

Institution

Funder

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Contact information of fellow

Country

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Vascular Dementia: revealing the detrimental synergy between hypertension, micro-strokes and Neuro-Vascular Decoupling

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Alzheimer's disease & other dementias

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Neurovascular coupling | two-photon microscopy | in vivo | hypertension | Alzheimer's disease | micro-strokes | dementia | vascular dynamics | vascular network | calcium imaging | optogenetics | viral vectors.

Research Abstract

Research in recent years has started to provide an alternative view to Alzheimer's etiology emphasizing the role of other factors such as inflammation and brain vascular alterations in the development of Alzheimer. Of major interest is the link between AD and hypertension, another global epidemic affecting millions of people worldwide. Hypertension results in increased stiffness of the brain vasculature leading, among others, to chronic cerebral hypoperfusion. Little is known about the short and long-term consequences of such hypoperfusion on neuronal dynamics. Hypoperfusion alters the function of the blood brain barrier; a cellular ensemble that actively keeps at bay pathogens and alike from entering the brain parenchyma. Amyloid and its products are under strict control across this barrier. Hence, damage to the barrier results in their accumulation in the brain parenchyma, which likely contributes to neuronal dysfunction and dementia. This recently recognized tight association between AD and hypertension opens new venues for both basic and translational research with the promise to better understand and likely treat these two maladies together.

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