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Cortical thickness and surface area networks in Alzheimer's disease and behavioral variant frontotemporal dementia

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Motivated by prior data of cortical regional volume differences, we investigated changes in cortical structural networks in Alzheimer's disease (AD) and behavioral variant frontotemporal dementia (bvFTD). We estimated structural correlation from magnetic resonance image (MRI) measures of cortical thickness and surface area at 68 regions, in a total of 628 participants (202 healthy elderly (HE), 213 bvFTD and 213 AD). We used network modules (i.e., groups of regions that have a high density of connections within them, with a lower density of connections between groups) to estimate changes in cortical networks that attribute globally, locally and at the lobe level. We found that the strength of structural correlation differs in bvFTD and in AD group compared to HE. Global correlation of regional thinning is a marker of bvFTD condition and the surface area correlation is a marker of AD. Cortical thickness and surface area correlational networks show a quite distinctive hub like organization, which also differs both from normal and between the two forms of dementia. We conclude that bvFTD and AD are associated with structural imaging markers of brain network organization differently.

Biography

Vesna Vuksanovic is working as a Research Fellow at the University of Aberdeen, Biomedical Imaging Centre. She has her specialization in Neuroimaging in Health and Neurodegenerative Diseases. Her research interests include developing models of the brain as a network of complex interacting components; application of these models in the context of brain disorders in dementia and understanding the progression of neurodegenerative processes using computational modeling of neuroimaging data.

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