

The influence of cortical neurodegenerative pathology on white matter integrity

<https://www.neurodegenerationresearch.eu/survey/the-influence-of-cortical-neurodegenerative-pathology-on-white-matter-integrity/>

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United Kingdom

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Research Abstract

White matter lesions (WML), visualized as white matter hyperintensities (WMH) on MRI, are frequent in the aged human brain and assumed to indicate underlying small vessel disease (SVD). However, an axonal degeneration mechanism termed Wallerian-like degeneration (WLD) that is associated with neurodegeneration has been suggested to contribute to WML pathogenesis. Indeed, we found 35% of post mortem brains (n=60) to present with severe WML but virtually no SVD. However, these brains exhibited severe neocortical tau pathology, thus pointing towards a potential role of cortical neurodegenerative pathology in the pathogenesis of WML. In order to further elucidate the relationship between cortical neurodegenerative

pathology and WML we will use post mortem brains (n=100) to assess i) axonal pathology, ischemia and distribution of cellular subtypes in the white matter, ii) quantities of cortical neurodegenerative pathology, iii) small vessel disease and iv) WMH on both ante- and post-mortem MRI images. Our multimodal approach will enable us to further elucidate the different patho-physiological mechanisms that may underlie white matter damage in the ageing brain and to identify specific patterns of WMH on MRI that are associated with specific patho-physiological mechanisms whether this is axonal degeneration, vascular damage or a combination of the two. A better understanding of these processes will help clinical decision making in terms of deciding whether WMH are related to underlying vascular pathology or a primary cortical neurodegenerative process such as Alzheimer's disease and ensure that patients receive the most appropriate treatment for their condition.

Further information available at:

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