Neuroimaging

Untangling tau imaging

Victor L. Villemagne a,b,c,*, Nobuyuki Okamura d, Christopher C. Rowe a,c

aDepartment of Molecular Imaging & Therapy, Centre for PET, Austin Health, Melbourne, Australia
bThe Florey Institute of Neuroscience and Mental Health, The University of Melbourne, Melbourne, Australia
cDepartment of Medicine, The University of Melbourne, Melbourne, Australia
dDepartment of Pharmacology, Tohoku University, Sendai, Japan

Abstract

In vivo imaging of tau deposits is providing a better understanding of the temporal and spatial tau deposition in the brain, allowing a more comprehensive insight into the causes, diagnoses, and potentially treatment of tauopathies such as Alzheimer’s disease, progressive supranuclear palsy, corticobasal syndrome, chronic traumatic encephalopathy, and some variants of frontotemporal lobar degeneration. The assessment of tau deposition in the brain over time will allow a deeper understanding of the relationship between tau and other variables such as cognition, genotype, and neurodegeneration, as well as assessing the role tau plays in ageing. Preliminary human studies suggest that tau imaging could also be used as a diagnostic, prognostic, and theranostic biomarker, as well as a surrogate marker for target engagement, patient recruitment, and efficacy monitoring for disease-specific therapeutic trials.

© 2016 The Authors. Published by Elsevier Inc. on behalf of the Alzheimer’s Association. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Keywords: PET; Tau imaging; Alzheimer’s disease; Positron emission tomography; Tauopathies; Dementia

Acknowledgments

We thank Professors Yukitsuda Kudo, Colin Masters, Kazuhiko Yanai, Shozo Furumoto, Drs Ryuichi Harada, Michelle Fodero-Tavoletti, William P. Blatty, Mrs Svetlana Pejoska-Bozinovski, Ms Fiona Lamb, and the Brain Research Institute for their assistance with this study. This review was supported in part by NHMRC Project Grant 1044361. VLV is supported by NHMRC Research Fellowship 1046471. The funding sources had no input into the design of this study, the analysis of data, or writing of the manuscript.

*Corresponding author. Tel.: +61-394963321; Fax: +61-3-9496 5663. E-mail address: victorlv@unimelb.edu.au

http://dx.doi.org/10.1016/j.dadm.2016.05.001
2352-8729/ © 2016 The Authors. Published by Elsevier Inc. on behalf of the Alzheimer’s Association. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).
Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.jadm.2016.05.001.

Reference mentioned in this video article can be found here.

References


