

1S Molecular Imaging of Neurodegeneration: The Way to New Horizons

Victor L. Villemagne and Henryk Barthel

Villemagne and Barthel introduce this special issue of *JNM* on the current state of the art in molecular imaging in neurodegeneration and opportunities for future development.

2S ¹⁸F-FDG PET Imaging in Neurodegenerative Dementing Disorders: Insights into Subtype Classification, Emerging Disease Categories, and Mixed Dementia with Copathologies

Satoshi Minoshima, Donna Cross, Tanyaluck Thientunyakit, Norman Foster, and Alexander Drzezga

Minoshima and colleagues look at evolving applications of ¹⁸F-FDG PET in neurodegenerative dementia, with a focus on integration of recent discoveries to extend this “workhorse” tool as a precise imaging biomarker of functional disease endophenotype.

13S The Role of Amyloid PET in Imaging Neurodegenerative Disorders: A Review

Marianne Chapleau, Leonardo Iaccarino, David Soleimani-Meigooni, and Gil D. Rabinovici

Chapleau and colleagues provide an overview of the use of amyloid PET in neurodegenerative diseases, including clinical, pathologic, and imaging correlates; applications in clinical trials; and the comparative utility of other available biomarkers.

20S Tau PET Imaging in Neurodegenerative Disorders

Colin Groot, Sylvia Villeneuve, Ruben Smith, Oskar Hansson, and Rik Ossenkoppele

Groot and colleagues review methodologic challenges associated with tau PET imaging and assess its growing acceptance as a diagnostic and potentially prognostic marker in dementia and for monitoring novel treatments in clinical trials.

27S Imaging Dopaminergic Neurotransmission in Neurodegenerative Disorders

Elon D. Wallert, Elsmarieke van de Giessen, Remco J.J. Knol, Martijn Beudel, Rob M.A. de Bie, and Jan Booij

Wallert and colleagues summarize current approaches to imaging brain dopaminergic neurotransmission in neurodegenerative disorders in both routine clinical practice and research settings.

33S PET Imaging of Cholinergic Neurotransmission in Neurodegenerative Disorders

Solveig Tiepolt, Philipp M. Meyer, Marianne Patt, Winnie Deuther-Conrad, Swen Hesse, Henryk Barthel, and Osama Sabri

Tiepolt and colleagues describe the current status of PET imaging of cholinergic neurotransmission, including utility in diagnosis, disease and therapy monitoring, and pathophysiologic elucidation of various neurodegenerative disorders.

45S Imaging Neuroinflammation in Neurodegenerative Disorders

Joseph C. Masdeu, Belen Pascual, and Masahiro Fujita

Masdeu and colleagues present the characteristics of available PET neuroinflammation tracers and their applications in various neurodegenerative disorders, along with the potential for new PET inflammation biomarkers.

53S Cyclooxygenases as Potential PET Imaging Biomarkers to Explore Neuroinflammation in Dementia

Bruny V. Kenou, Lester S. Manly, Sara B. Rubovits, Somachukwu A. Umeozulu, Maia G. Van Buskirk, Andrea S. Zhang, Victor W. Pike, Paolo Zanotti-Fregonara, Ioline D. Henter, and Robert B. Innis

Kenou and colleagues review the development of PET radioligands for cyclooxygenase subtypes 1 and 2 as biomarkers of neuroinflammation and summarize recent imaging research in animals and humans.

60S Imaging of Synaptic Density in Neurodegenerative Disorders

Richard E. Carson, Mika Naganawa, Takuya Toyonaga, Sheida Koohsari, Yanghong Yang, Ming-Kai Chen, David Matuskey, and Sjoerd J. Finnema

Carson and colleagues highlight the introduction of synaptic vesicle protein 2A tracers and quantification methods, including compartment modeling and simple tissue ratios, in both preclinical and human PET imaging.

68S Future Directions in Molecular Imaging of Neurodegenerative Disorders

Henryk Barthel, Victor L. Villemagne, and Alexander Drzezga

Barthel and colleagues offer perspectives on the future of neurodegeneration tracers and associated imaging technologies, pointing toward enhanced understanding of disease and improved patient care.

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