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Topic: *Theme B: Taupathies / B4.c. Imaging, Biomarkers, Diagnostics: PET – tau*

18F-THK5351 PET IMAGING, NEUROPATHOLOGY AND CLINICAL PROGRESSION IN A TAU MOUSE MODEL.

Lecture Title:

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Aims: Alzheimer's disease (AD) and other associated dementias remain a consistent and unruly problem for the aging population and health. The neuropathology of AD is characterized by the extracellular deposition of beta-amyloid protein (Aβ) and the formation of intraneuronal neurofibrillary tangles (NFT) composed of hyperphosphorylated tau (ptau), along with neuroinflammation and neuronal loss that ultimately induces to noticeable cognitive impairments. Abnormal ptau leads to the formation of insoluble, beta-sheet rich amyloid aggregates in tauopathies such as AD. Positron emission tomography (PET) imaging is a promising avenue that may identify tau aggregates in vivo cross-sectionally and longitudinally in various dementia conditions.
Methods: The goal of this study is to characterize the longitudinal assessment of the tau tracer ^{18}F-THK5351 by in vivo tau PET imaging concomitantly to behavior and tau pathology by histology and biochemistry from 6 to 12 months of age in tau transgenic P301S mice, a mouse model of tauopathies.
Results: Our results demonstrate an augmentation of overall gross brain tau pathology by in vivo PET imaging in P301S mice compared to age-matched wild-type (WT) animals accompanied by P301S-model associated pathological tau and phenotypic and behavioral deficits.
Conclusions: This longitudinal study provides new insights on the relationship between imaging diagnostic tools, the in vivo neuropathological temporal pattern and the clinical signs observed in animal models of AD that could benefit early disease diagnosis. This work was partially funded by Department of Defense Peer Reviewed Alzheimer's Research Program Convergence Science. Research Award grant AZ160106 and Alzheimer's Association New Investigator Research Grant NIRG-394284 to IMG.