correlation between global FMM retention and brain atrophy in any groups. There were positive correlations between THK retention in the frontal, parietal, occipital cortices or precuneus and FMM retention in the frontal, parietal cortices or precuneus. EOAD had weak positive correlation between THK and FMM retention only in the occipital cortex. **Conclusions:** LOAD showed gradual increase in both tau and amyloid and those two pathologies have association to each other. Whereas, in EOAD, tau and amyloid may develop more abruptly and independently. Brain atrophy was associated with tau burden in EOAD, however, was not correlated with amyloid burden in EOAD or LOAD. These findings suggest LOAD and EOAD may have different courses of pathomechanism.

IC-01-04 A ROBUST, SIMPLIFIED BRAAK-TYPE CLASSIFICATION SCHEME FOR FLORTAUCIPIR F-18 TAU PET IMAGES

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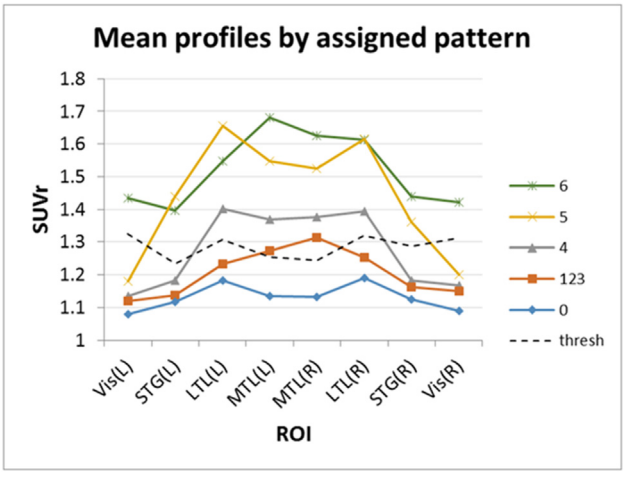
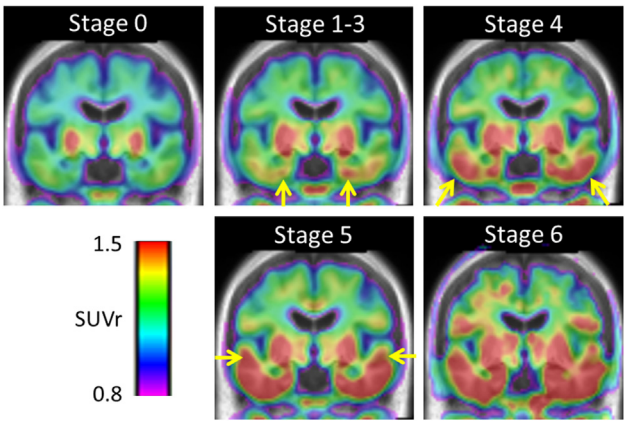
Background: Using ROIs based on the Braak staging scheme, patterns of [18F]-flortaucipir binding consistent with expectations from tau neuropathology can be observed in vivo [Schwarz et al., Brain 2016]. However, small regions of interest (ROIs) are potentially sensitive to variations in image preprocessing, atrophy and experimental noise. Medial temporal lobe (MTL) regions distinguishing stages 1-3 are prone to contamination from adjacent extraparenchymal signals and binding to the choroid plexus. Our aim was to identify a simplified and practical flortaucipir PET staging scheme for AD, robust to the above nuisance factors. **Methods:** Four ROIs were defined from standard Harvard-Oxford or Juelich (FSL) atlas structures: (1) an MTL ROI comprising the anterior hippocampus, the parahippocampal/entorhinal and fusiform gyri; (2) a lateral temporal lobe (LTL) ROI comprising the anterior inferior and middle temporal gyri; (3) anterior superior temporal gyrus; and (4) primary visual cortex. We compared larger and smaller variants on these ROIs, and evaluated the effect of grey-matter masking. Individual subject ROI profiles were binarized at 3SD above the mean signal in each ROI from 14 young controls and matched to predefined Braak-like patterns. Staging (0, 1-3, 4, 5 or 6) was performed on each hemisphere independently and the most advanced stage taken. Stages 1-3 were not differentiated. Performance was





evaluated in terms of maximizing test-retest consistency (N=21) and minimizing the number of unassigned profiles (N=21+236). The algorithm was then prospectively applied to flortaucipir scans from ADNI-2 (N=101). **Results:** The larger ROIs and simplified staging scheme yielded higher test-retest consistency and reduced number of unassigned profiles than the published approach. The variant ROIs and grey matter masking did not improve performance. Applied to the ADNI data set, 91% of subjects were classified into a typical predefined estimated Braak stage pattern (Figure). Higher stage tau patterns were associated with more advanced disease severity and amyloid positivity. **Conclusions:** This simplified flortaucipir staging scheme provides a practical and robust means of classifying tau patterns in vivo in terms of involvement of the sentinel brain regions proposed by Braak. It is easily implemented using widely available atlases, and may complement other tau PET summary measures.

IC-01-05 FIRST-IN-HUMAN PET STUDIES WITH THE NEXT GENERATION TAU AGENT 18-F PI-2620 IN ALZHEIMER'S DISEASE, PROGRESSIVE SUPRANUCLEAR PALSY, AND CONTROLS

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Background: Intracellular tau deposition is a key pathologic feature of Alzheimer's disease (AD) and other neurodegenerative disorders. Recently, positron emission tomography tau probes have been developed for in vivo detection of brain tau load, although quantification is challenging due to high off-target binding and slow kinetics. Further, different tau radiotracers have different affinities for tau species. PI-2620 is a novel tracer with an IC50 of 1.8 nM for tau in AD brain homogenate competition-assays and binds specifically to tau deposits in AD brain sections (Braak I-VI), Pick's, and progressive supranuclear palsy (PSP) pathologies. This first-in-human study assesses 18-F-labelled PI-2620 in AD, PSP, and healthy volunteers. **Methods:** In an ongoing clinical imaging study, participants diagnosed with mild Alzheimer's (AD), non-AD tauopathies (e.g. PSP), and healthy volunteers (HV) undergo dynamic PET imaging for over 3 h following 370 MBq bolus