Research Activity:
[18F]AV-1451 PET Distinguishes Alzheimer’s Disease (AD) and Progressive Supranuclear Palsy (PSP): The NIMROD Study

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INTRODUCTION
Alzheimer’s disease (AD) and Progressive supranuclear palsy (PSP) are associated with abnormal accumulation of misfolded and aggregated tau protein (1, 2).
New Positron Emission Tomography (PET) tracers, like [18F] AV-1451 have been developed to measure in vivo regional binding potential to aggregated tau (3).
The aims of this study were to evaluate brain tau pathology as an in vivo tau biomarker to discriminate between both groups and whether brain tau pathology correlates with disease severity.

METHODS
12 healthy controls (HC), 15 AD/MCI+ and 17 PSP patients were recruited as part of the Neuroimaging of Inflammation in MemoRy and Other Disorders (NIMROD) study.
MRI included a T1 sequence to facilitate tissue class segmentation, while in PET, [18F]AV-1451 non-displaceable binding potential (BPND) was determined for each CSF-corrected Hammers atlas and reference tissue ROI data.

RESULTS

![Graph showing BPND in hippocampus and midbrain](image)
Fig 1. Support vector machine analyses using [18F]AV-1451 binding in the hippocampus and midbrain distinguished the clinical groups with 97% accuracy.

![Graph showing [18F]AV-1451 binding](image)
Fig 2. [18F]AV-1451 non-displaceable binding potential (BPND) maps of representative single cases.

DISCUSSION
✓[18F]AV-1451 positron emission tomography is a useful in vivo tool to assess the distribution of tau pathology in AD and PSP.
✓The sites of binding are as expected from the pathophysiology of both diseases in post mortem studies, and are in keeping with the cognitive and motor features of the clinical syndromes classically seen in AD/MCI and PSP.

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REFERENCES