Abstract Sample:

Molecular imaging in Alzheimer disease: From basic development to clinical application

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Amyloid β (Aβ) deposition precedes the formation of neurofibrillary tangles in the neocortex. However, medial temporal tau pathology develops with advancing age and is related to memory loss even in the absence of Aβ plaques. Autopsy studies suggest that tau pathology in the medial temporal lobe progresses with age, whereas the spread of tau pathology across the neocortex is probably influenced by Aβ burden. For many years, the formation of tau pathology was impossible to monitor in patients. However, recent progress in the development of tau-selective PET tracers enabled non-invasive visualization of neurofibrillary pathology in the human brain. The amount and spatial distribution of tau tracer binding is closely associated with neurodegeneration and cognitive symptom of dementia. Therefore, tau PET imaging is expected to be useful for tracking disease progression, assessing disease severity, and accurately predicting dementia prognosis. PET molecular imaging enables sensitive and selective detection of neurofibrillar pathology and tau-associated astrogliosis in Alzheimer's disease. Tau PET imaging could be employed to study longitudinal tau deposition in normal aging and pathological process of Alzheimer's disease.