Tau Imaging in AD

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Molecular imaging (PET), detecting abnormal proteins (β-amyloid and tau) in the pathologic brain, is a promising modality for early detection and disease staging in Alzheimer's disease. As a result of considerable effort to develop amyloid PET for around 10 years, commercial use of Amyloid PET was approved by FDA last year and KFDA this year. However, tau imaging in Alzheimer's disease is the stage that the journey is just beginning. Recently, to my knowledge, several tau PET tracers including F-18 THK-5117, F-18 THK523, F-18 THK 5105, F-18 T807, F-18 T808, F-18 FDDNP, and C-11 PBB3 have been developed and succeeded in imaging neuro-fibrillary tangles in vivo. Tauopathy, a progressive accumulation of tau in the brain, occurred in several neurodegenerative disease including Alzheimer's disease, progressive supranuclear palsy, corticobasal degeneration, chronic traumatic encephalopathy, logopenic aphasia, and some variants of frontotemporal lobar degeneration (PNFA, bvFTD). In neuropathological studies of Alzheimer's disease, the amount of tau deposition in the brain is very well correlated with cognitive impairment. Some tau PET tracers have high selective binding and affinity to purified PHF-tau protein in ex vivo human brain. In the future, tau PET imaging may serve as a tool to aid in affirmative diagnosis, as well as in disease staging of Alzheimer's disease.

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