

Article: 0025

Topic: S06 - Symposium 06: An update on the interface of dementia, physical health and its relevance for diagnosis and therapy

PET-imaging of Cerebral Glucose Metabolism and of Cerebral Beta-amyloid-deposition and Its Value for the Understanding, Early Detection and Differential Diagnosis of Alzheimer's Disease

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Alzheimer's disease is now seen as a process that starts decades before cognitive impairment occurs and becomes severe enough to cause dementia.

It has been acknowledged, that biomarkers of this process (e.g.: CSF, structural MRI, FDG-PET (positron emission tomography), Amyloid-PET) increase diagnostic certainty and facilitate early diagnosis under the ultimate goal of early intervention.

This presentation will focus on PET-imaging of cerebral glucose metabolism by ¹⁸[F]-FDG-PET and cerebral beta-amyloid-deposition by the amyloid-binding PET Tracers (¹¹[C]-PiB, ¹⁸[F]-Florbetapir, ¹⁸[F]-Flutemetamol) and its value for the understanding, early detection and differential diagnosis of Alzheimer's disease.

It will highlight clinical situations in which these diagnostics are considered useful and potential caveats.

Finally it will provide a perspective how dementia diagnostics may evolve to in vivo assessment of pathology that predicts clinical phenotype and ideally therapeutic intervention.