Titel des Beitrags:
Cerebral amyloid-\(\beta\) PET with florbetaben (18F) in patients with Alzheimer’s disease and healthy controls: a multicentre phase 2 diagnostic study.

Abstract:
Imaging with amyloid-\(\beta\) PET can potentially aid the early and accurate diagnosis of Alzheimer’s disease. Florbetaben (\(^{18}\text{F}\)) is a promising \(^{18}\text{F}\)-labelled amyloid-\(\beta\)-targeted PET tracer in clinical development. We aimed to assess the sensitivity and specificity of florbetaben (\(^{18}\text{F}\)) PET in discriminating between patients with probable Alzheimer’s disease and elderly healthy controls. We did a multicentre, open-label, non-randomised phase 2 study in 18 centres in Australia, Germany, Switzerland, and the USA. Imaging with florbetaben (\(^{18}\text{F}\)) PET was done on patients with probable Alzheimer’s disease (age 55 years or older, mini-mental state examination [MMSE] score=18-26, clinical dementia rating [CDR]=0.5-2.0) and age-matched healthy controls (MMSE\(>=\) 28, CDR=0). Our primary objective was to
establish the diagnostic efficacy of the scans in differentiating between patients with probable disease and age-matched healthy controls on the basis of neocortical tracer uptake pattern 90-110 min post-injection. PET images were assessed visually by three readers masked to the clinical diagnosis and all other clinical findings, and quantitatively by use of pre-established brain volumes of interest to obtain standard uptake value ratios (SUVRs), taking the cerebellar cortex as the reference region. This study is registered with ClinicalTrials.gov, number NCT00750282. 81 participants with probable Alzheimer's disease and 69 healthy controls were assessed. Independent visual assessment of the PET scans showed a sensitivity of 80% (95% CI 71-89) and a specificity of 91% (84-98) for discriminating participants with Alzheimer's disease from healthy controls. The SUVRs in all neocortical grey-matter regions in participants with Alzheimer's disease were significantly higher (p<0.0001) compared with the healthy controls, with the posterior cingulate being the best discriminator. Linear discriminant analysis of regional SUVRs yielded a sensitivity of 85% and a specificity of 91%. Regional SUVRs also correlated well with scores of cognitive impairment such as the MMSE and the word-list memory and word-list recall scores (r=-0.27 to -0.33, p<=0.021). APOE ?4 was more common in participants with positive PET images compared with those with negative scans (65% vs 22% [p=0.027] in patients with Alzheimer's disease; 50% vs 16% [p=0.074] in healthy controls). No safety concerns were noted. We provide verification of the efficacy, safety, and biological relevance of florbetaben (?F) amyloid-? PET and suggest its potential as a visual adjunct in the diagnostic algorithm of dementia. Bayer Schering Pharma AG.