The purpose of this study is to validate the feasibility of a voxel-based analysis of in vivo amyloid-\(\beta\) positron emission tomography (PET) imaging studies in transgenic mouse models of Alzheimer’s disease. We performed \([11]C\)PiB PET imaging in 20 APP/PS1 mice and 16 age-matched controls, and histologically determined the individual amyloid-\(\beta\) plaque load. Using SPM software, we performed a voxel-based group comparison plus a regression analysis between PiB retention and actual plaque load, both thresholded at \(p\) FWE < 0.05. In addition, we carried out an individual ROI analysis in every animal. The automated voxel-based group comparison allowed us to identify voxels with significantly increased PiB retention in the cortical and hippocampal regions in transgenic animals compared to controls. The voxel-based regression analysis revealed a significant association between this signal increase and the actual cerebral plaque load. The validity of these results was corroborated by the individual ROI-based analysis. Voxel-based analysis of in vivo amyloid-\(\beta\) PET imaging studies in mouse models of Alzheimer’s disease is feasible and allows studying the PiB retention patterns in whole brain maps. Furthermore, the selected approach in our study also allowed us to establish a quantitative relation between tracer retention and actual plaque pathology.
in the brain in a voxel-wise manner.

Zeitschriftentitel / Abkürzung: Mol Imaging Biol

Jahr: 2013

Band: 15

Heft / Issue: 5

Seiten: 576-84

Sprache: eng


Print-ISSN: 1536-1632

TUM Einrichtung: Nuklearmedizinische Klinik und Poliklinik

Occurences:

· Einrichtungen > Fakultäten > Fakultät für Medizin > Kliniken und Institute > Nuklearmedizinische Klinik und Poliklinik > 2013

entries: