Dokumenttyp: journal article

Autor(en) des Beitrags:
Grienberger, C; Rochefort, NL; Adelsberger, H; Henning, HA; Hill, DN; Reichwald, J; Staufenbiel, M; Konnerth, A

Titel des Beitrags:
Staged decline of neuronal function in vivo in an animal model of Alzheimer's disease.

Abstract:
The accumulation of amyloid-β in the brain is an essential feature of Alzheimer's disease. However, the impact of amyloid-β-accumulation on neuronal dysfunction on the single cell level in vivo is poorly understood. Here we investigate the progression of amyloid-β load in relation to neuronal dysfunction in the visual system of the APP23×PS45 mouse model of Alzheimer's disease. Using in vivo two-photon calcium imaging in the visual cortex, we demonstrate that a progressive deterioration of neuronal tuning for the orientation of visual stimuli occurs in parallel with the age-dependent increase of the amyloid-β load. Importantly, we find this deterioration only in neurons that are hyperactive during spontaneous activity. This impairment of visual cortical circuit function also correlates with pronounced deficits in visual-pattern discrimination. Together, our results identify distinct stages of decline in sensory cortical performance in vivo as a function of the increased amyloid-β-load.

Zeitschriftentitel / Abkürzung:
Nat Commun

Jahr: 2012
Band: 3
Seiten: 774
Sprache:
Pubmed:

TUM Einrichtung:
Institut für Neurowissenschaften

Occurences:
- Einrichtungen > Fakultäten > Fakultät für Medizin > Kliniken und Institute > Institut für Neurowissenschaften > 2012

entries: