Abstract: Longitudinal functional imaging studies of stroke are key in identifying the disease progression and possible therapeutic interventions. Here we investigate the applicability of real-time functional optoacoustic imaging for monitoring of stroke progression in the whole brain of living animals. The middle cerebral artery occlusion (MCAO) was used to model stroke in mice, which were imaged preoperatively and the occlusion was kept in place for 60 minutes, after which optoacoustic scans were taken at several time points. Post ischemia an asymmetry of deoxygenated hemoglobin in the brain was observed as a region of hypoxia in the hemisphere affected by the ischemic event. Furthermore, we were able to visualize the penumbra in-vivo as a localized hemodynamically-compromised area adjacent to the region of stroke-induced perfusion deficit. The intrinsic sensitivity of the new imaging approach to functional blood parameters, in combination with real time operation and high spatial resolution in deep living tissues, may see it become a valuable and unique tool in the development and monitoring of treatments aimed at suspending the spread of an infarct area.
Occurences:

- Einrichtungen > Fakultäten > Fakultät für Medizin > Kliniken und Institute > Neurochirurgische Klinik und Poliklinik > 2014

- Einrichtungen > Fakultäten > Fakultät für Medizin > Kliniken und Institute > Institut für Biologische Bildgebung > Lehrstuhl für Biologische Bildgebung - Zusammenarbeit mit dem Helmholtz-Zentrum München (Prof. Ntziachristos) > 2014

entries: