Fakultät für Medizin

Dokumenttyp: journal article

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Titel des Beitrags: Assessing the risk of central post-stroke pain of thalamic origin by lesion mapping.

Abstract: Central post-stroke pain of thalamic origin is an extremely distressing and often refractory disorder. There are no well-established predictors for pain development after thalamic stroke, and the role of different thalamic nuclei is unclear. Here, we used structural magnetic resonance imaging to identify the thalamic nuclei, specifically implicated in the generation of central post-stroke pain of thalamic origin. Lesions of 10 patients with central post-stroke pain of thalamic origin and 10 control patients with thalamic strokes without pain were identified as volumes of interest on magnetic resonance imaging data. Non-linear deformations were estimated to match each image with a high-resolution template and were applied to each volume of interest. By using a digital atlas of the thalamus, we elucidated the involvement of different nuclei with respect to each lesion. Patient and control volumes of interest were summed separately to identify unique areas of involvement. Voxelwise odds ratio maps were calculated to localize the anatomical site where lesions put patients at risk of developing central post-stroke pain of thalamic origin. In the patients with pain, mainly lateral and posterior thalamic nuclei were affected, whereas a more anterior-medial lesion pattern was evident in the controls. The lesions of 9 of 10 pain patients overlapped at the border of the ventral posterior nucleus.
and the pulvinar, coinciding with the ventrocaudalis portae nucleus. The lesions of this area showed
an odds ratio of 81 in favour of developing thalamic pain. The high odds ratio at the ventral posterior
nucleus-pulvinar border zone indicates that this area is crucial in the pathogenesis of thalamic pain
and demonstrates the feasibility of identifying patients at risk of developing central post-stroke pain of
thalamic origin early after thalamic insults. This provides a basis for pre-emptive treatment studies.