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Titel des Beitrags:
Resection of highly language-eloquent brain lesions based purely on rTMS language mapping without awake surgery.

Abstract:
The resection of left-sided perisylvian brain lesions harbours the risk of postoperative language impairment. Therefore the individual patient's language distribution is investigated by intraoperative direct cortical stimulation (DCS) during awake surgery. Yet, not all patients qualify for awake surgery. Non-invasive language mapping by repetitive navigated transcranial magnetic stimulation (rTMS) has frequently shown a high correlation in comparison with the results of DCS language mapping in terms of language-negative brain regions. The present study analyses the extent of resection (EOR) and functional outcome of patients who underwent left-sided perisylvian resection of brain lesions based purely on rTMS language mapping. Four patients with left-sided perisylvian brain lesions (two gliomas WHO III, one glioblastoma, one cavernous angioma) underwent rTMS language mapping prior to surgery. Data from rTMS language mapping and rTMS-based diffusion tensor imaging fibre tracking (DTI-FT) were transferred to the intraoperative neuronavigation system. Preoperatively, 5 days after surgery (POD5), and 3 months after surgery (POM3) clinical follow-up examinations were performed. No patient suffered from a new surgery-related aphasia at POM3. Three patients underwent complete...
resection immediately, while one patient required a second rTMS-based resection some days later to achieve the final, complete resection. The present study shows for the first time the feasibility of successfully resecting language-eloquent brain lesions based purely on the results of negative language maps provided by rTMS language mapping and rTMS-based DTI-FT. In very select cases, this technique can provide a rescue strategy with an optimal functional outcome and EOR when awake surgery is not feasible.