Presurgical navigated transcranial magnetic brain stimulation for recurrent gliomas in motor eloquent areas.

Navigated transcranial magnetic stimulation (nTMS) has been repeatedly shown to be comparably accurate to direct cortical stimulation (DCS) for rolandic region mapping. However, there are no data on its use for recurrent gliomas in which scarring and radiotherapy can impair nTMS. We therefore evaluated the accuracy of nTMS versus DCS and functional MRI (fMRI) in recurrent gliomas compared to initially operated tumors. We examined 8 patients with recurrent gliomas and 23 patients with initially operated lesions in or adjacent to the precentral gyrus by preoperative nTMS. Preoperative motor mapping correlated well with intraoperative DCS in recurrent gliomas (6.2±6.0mm), as well as in newly diagnosed tumor patients (5.7±4.6mm) with no significant difference. Compared to fMRI, the difference was larger for upper (recurrent: 8.5±7.2mm; new: 9.8±8.6mm) and lower (recurrent: 17.1±10.6mm; new: 13.8±13.0mm) extremities, with no significant differences. When comparing nTMS with DCS and fMRI, nTMS is as accurate in recurrent gliomas as it is prior to the first operation. It should be considered a helpful modality in recurrent glioma patients as well. nTMS is also applicable in recurrent tumors.