Postoperative navigated transcranial magnetic stimulation

To know whether motor deficits after tumor surgery are transient is reassuring for the patient and crucial for planning rehabilitation and adjuvant treatment. Seidel et al., analyzed the value of postoperative MRI navigated transcranial magnetic stimulation (nTMS) compared to intraoperative MEP monitoring in predicting recovery of motor function.

Retrospective series of nTMS mappings within 14 days after surgery for supratentorial tumors (09/2014-05/2018). All patients with motor deficits of Medical Research Council Scale for Muscle Strength (MRCS) 0-4- were included.

We performed nTMS mapping on average 3.8 days after surgery and recorded nTMS MEP in 11 of 13 patients. Motor strength recovered to at least MRCS 4 within one month if postoperative nTMS elicited MEPs (positive predictive value 90.9%). If nTMS did not elicit MEPs, the patient did not recover (negative predictive value 100%). Intraoperative MEP and postoperative nTMS were equally predictive for long-term motor recovery. In cases of intraoperative MEP alteration/signal loss, but a positive postoperative nTMS mapping, 2/3 patients demonstrated a good motor recovery.

nTMS may predict long-term motor recovery of patients suffering from severe motor deficits directly after resection of tumors located in motor eloquent areas.

In cases of intraoperative MEP alterations, postoperative nTMS may clarify the potential for motor recovery [1].

1)
Seidel K, Häni L, Lutz K, Zbinden C, Redmann A, Consuegra A, Raabe A, Schucht P. Postoperative navigated transcranial magnetic stimulation to predict motor recovery after surgery of tumors in motor eloquent areas. Clin Neurophysiol. 2019 Apr 5;130(6):952-959. doi: 10.1016/j.clinph.2019.03.015. [Epub ahead of print] PubMed PMID: 30981901.