Functional tremor

Generation of functional tremor relies on the structures involved in the control of voluntary movements. The clinical diagnosis is based on the presence of "positive signs", which are expression of cognitive and motor distractibility and reflect functional tremor dependence on explicit motor control. In patients who manifest less distractibility, habitual (implicit) control may be of greater significance. Habitual behaviours are inflexible and difficult to eradicate.

Objectives: To investigate if motor and cognitive distractibility predicts response to treatment with repetitive transcranial magnetic stimulation.

Methods: 21 patients with functional tremor underwent 5-day repeated sessions of continuous theta burst stimulation over primary motor cortex. A battery of tests to provoke positive signs was performed during accelerometry recordings and the total functional tremor accelerometry score was calculated for each patient. Response to treatment was measured as change in tremor amplitude, expressed as total power of the spectra between 1 and 30 Hz.

Results: On the group level, cTBS significantly changed postural tremor amplitude (Z = -1.9; p = 0.05), with the median decrease of 40%, IQR (-90-(+24)). There was a positive correlation between the functional tremor accelerometry score and reduction of postural tremor amplitude with treatment (rs = -0.75, p < 10-3). Responders had higher functional tremor accelerometry scores compared to non-responders (p = 0.001). The total functional tremor accelerometry score was a significant predictor of treatment response (OR = 2.8, p = 0.03; 95% Cl 1.1; 7.2).

Conclusions: Patients who are more distractible are better candidates for treatment with transcranial magnetic stimulation. The likely explanation is the between-subjects differences on the reliance of functional tremor generation on explicit vs. implicit motor network ¹⁾.

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Prezelj N, Vogelnik K, Georgiev D, Schwingenschuh P, Kojović M. Distractibility predicts favourable response of functional tremor to transcranial magnetic stimulation: An electrophysiological study. Parkinsonism Relat Disord. 2022 Mar 2;96:91-97. doi: 10.1016/j.parkreldis.2022.02.015. Epub ahead of print. PMID: 35259609.

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