Abstract:

Interference with gesture production by theta burst stimulation over left inferior frontal cortex

Tim Vanbellingen, Neurology Bern

Objective: The traditional view of a predominant inferior parietal representation of gestures has been recently challenged by neuroimaging studies demonstrating that gesture production and discrimination may critically depend on inferior frontal lobe function. The aim of the present work was therefore to investigate the effect of transient disruption of these brain sites by continuous theta burst stimulation (cTBS) on gesture production and recognition.

Methods: Fourteen healthy subjects participated in the study. A repeated measures design was employed with three experimental sessions: baseline (BSL), left inferior parietal (IPL) and inferior frontal (IFG) TBS. Gesture production and recognition was assessed in an off-line approach using a new test of upper limb apraxia (TULIA) and a modified version of postural knowledge test (PKT).

Results: TBS of the left IFG significantly lowered total TULIA scores. The effect was even more prominent when contrasted with IPL than with BSL. However, TBS over either stimulation site did not significantly influence PKT measures.

Conclusions: The interference of the left inferior frontal cTBS with gesture production emphasizes the role this brain region has in the control of gestures.

Significance: The study demonstrated that gesture performance is amenable to modulation with TBS.