

Effects of repeated theta burst stimulation on aphasia recovery

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Abstract

Aphasia is a common syndrome after left-lateralized stroke and is characterized by partial or total loss of language functions. Functional imaging studies examining language recovery after stroke often find an overactivation of the non-damaged right hemisphere. One hypothesis is that the overactivation is dysfunctional which is explained within the framework of interhemispheric inhibition. Non-invasive brain stimulation techniques such as transcranial magnetic stimulation (TMS) allow modulating cortical activity and may thereby offer novel therapeutic opportunities. A repetitive TMS protocol named theta burst stimulation (TBS) is increasingly used in clinical research. It has the advantage of a short application time combined with prolonged aftereffects. In a previous study we found better naming performance in aphasic patients after the application of one train of TBS over the right Broca's homologue. Applying TBS trains repeatedly can furthermore disproportionately prolong the effects, as was for example shown in neglect patients. Thus, repeated trains of TBS are applied in the present study in a randomized, sham controlled, cross-over design. After comprehensive baseline testing, eight TBS trains and eight sham stimulation trains are applied over the right Broca's homologue on two consecutive days separated by one week. On the second days of stimulation, several short language tests are administered. A follow-up with comprehensive language testing takes place one month after the stimulation. Preliminary results of this ongoing study will be presented. The aim of the study is to evaluate the effects of repeated TBS on several language tasks over a longer time span.