

Therapeutic Applications of Repetitive Transcranial Magnetic Stimulation in Neurology

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Some neurological and psychiatric disorders present with disabling symptoms for which presently effective, mechanism-based treatments are lacking. As a result, researchers all over the world are searching and evaluating newer drugs and also more advanced non-invasive therapeutic methods. One of these methods that modulate brain activity and may be useful in clinical practice is repetitive transcranial magnetic stimulation (rTMS). In this non-invasive procedure stimulation of electrical activity in the brain takes place through a pulsed magnetic field. rTMS is being evaluated for number of disorders all over the world. Apart from its use in assessment of aspects of human brain physiology, it has been found to be useful in a number of Neuropsychiatric conditions [1]. rTMS is reported to be useful in Psychiatric disorders like anxiety, depression, OCD, PTSD and negative symptoms of schizophrenia. rTMS therapy has also been found to have therapeutically beneficial effects in a number of neurological disorders viz. Parkinson's disease, tinnitus, neuropathic pain, post stroke conditions including paresis of upper and lower extremities, spasticity, dysphagia, aphasia, and neglect. It has also been found to be useful in treatment of impaired gait and spasticity in incomplete spinal cord injury subjects [2]. Despite encouraging results from a number of studies, rTMS is generally considered a research tool. The mechanism of action of rTMS is unclear, though present understanding is that it results in causing long-term inhibition and excitation of neurons in specific areas of the brain. However, response of the brain to application of rTMS is variable. As a result, it is difficult to predict an individual's response to rTMS therapy. On the other hand, rTMS therapy has not been associated with serious side-effects. Its safety in pregnancy has been established. Few encouraging reports of its use in children have also appeared [3]. The use of rTMS in neurology is in its infancy and a lot of aspects have to be studied before rTMS therapy can be used in routine neurological clinical practice. Double blind sham controlled rTMS studies have to be carried out

for each indications and protocols developed to ensure with optimum effectiveness. Taking into account the fact that the clinical benefits achieved with the application of rTMS are at times remarkable, energetic efforts to establish protocols for different disorders is an imperative need.

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