**Effect of Repetitive Transcranial Magnetic Stimulation and Modified Constraint Induced Movement Therapy on Upper Limb Function in Children with Hemiparetic Cerebral Palsy**

**Abstract**

**Objective:** The aim of this study was to assess effect on quality of life and safety of repetitive transcranial magnetic stimulation (rTMS) combined with modified constraint-induced movement therapy (mCIMT), in children with hemiparetic cerebral palsy (CP).

**Methods:**  In this single-centre, double blinded, randomized controlled trial, children with hemiparetic CP (aged 5-18 years) were randomized (using block randomization) to receive mCIMT with rTMS (intervention arm) or mCIMT with sham rTMS (control arm) for 4 weeks. Allocation concealment was done using opaque sealed envelopes. We assessed safety (by adverse event monitoring log) of rTMS and its effect on quality of life (by cerebral palsy quality of life, CP-QOL scale) of the study subjects at the end of 4 weeks and at 12 weeks follow-up.

**Results:** 46 children (30 boys) with age range of 5-15 years were randomized (23 in each arm) and all children except one completed the trial. In our study, none of the children had any serious adverse event. Only one child who was a known case of epilepsy and was in mCIMT + sham rTMS group had a brief breakthrough seizure which was self-aborted. Minor side-effects like mild headache and lightheadedness post rTMS sessions was seen in one child each. Difference in change in CP-QOL score at baseline and at 12 weeks of intervention was found to be significant for ‘feelings about functioning’ and ‘participation and physical health’ domains.

**Conclusion**: rTMS combined with mCIMT is safe and leads to improvement in quality of life in children with hemiparetic CP.