**Non-dominant hemisphere is more excitable compared to dominant hemisphere**

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**Objective**: Real time cortical excitability can be assessed in a non-invasive and quick technique using Transcranial Magnetic Stimulation(TMS), which gives an estimate of the neurophysiological nature of the underlying neurons. We compared the cortical excitability between the dominant and the non-dominant hemispheres, in typically developing children(TDC) and children with refractory epileptic encephalopathy like Electrical Status Epilepticus in Sleep(ESES).

**Methods**: TDC aged between 5 - 12 years and similar age matched children diagnosed with ESES were enrolled in the study. TMS parameters: resting motor threshold(RMT) was measured over motor cortex of both the hemispheres, in the TDC group and ESES groups. Dominant hemisphere was determined by the Edinburgh Handedness Inventory-Laterality Quotient(EHI-LQ).

**Result**: Twenty TDC along with another 20 children diagnosed with ESES were enrolled. The mean age of the TDC group(8.05+1.76 years) was similar to the ESES group(Mean age:8.35+2.41 years)(p=0.66). Among the TDC group, the mean RMT(Non-dominant vs dominant hemisphere) was 52.7+4.8 vs 58.05+4.71(p=0.001), which was statistically different. It was observed that there was a significant difference in the RMT between the two hemispheres in TDC. A similar difference between the two hemispheres was also seen in ESES group, in whom the mean RMT(Non-dominant vs dominant hemisphere) was 77.85±5.72 vs 86.3±6.96(p=0.002).

**Conclusion**: Motor cortex of the non-dominant hemisphere is more excitable as compared to the dominant hemisphere, both in typically developing children as well as children with ESES, indicating different levels of cortical excitability between the two hemispheres in normal basal state of the brain which persists even in diseased state.