**P1.171**

**ELECTRICAL FIELD CONSIDERATIONS FOR DEEP BRAIN STIMULATION PATIENTS UNDERGOING ELECTROCONVULSIVE THERAPY**

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**Abstract**

**Introduction:** ECT for a post Deep Brain Stimulation (DBS) implantation patient elicits apprehension given the limited available literature. Concerns arise regarding DBS device malfunction, alteration, or induction of high brain eFields, aberrant electrical conductivity over the metallic DBS coils, or shifting through a skull burr hole defect. There also exists the potential for cranial metallic objects to create high amperage through low impedance pathways creating abnormal tissue warming.

**Case Report:** We offer a case report of a 65-year-old WF admitted for severe psychotic depression with a right-sided constant voltage DBS implant for Parkinson’s Disease who received an Index Series of ECT using a MECTA SpecTrum 5000Q ECT Device. DBS device was an Activa SC 37603 Multi-program neurostimulator with DBS Lead Model #3387, and Medtronic SpECTrum 5000Q ECT Device. DBS device was an Activa SC 37603 Multi-program neurostimulator with DBS Lead Model #3387, and Medtronic SpECTrum 5000Q ECT Device.

**Results:** The DBS device remained viable throughout all treatments and measured brain impedances within normal limits. At 6 months f/u, the DBS device battery alert light was operational and functioning properly with DBS battery replacement occurred 1 year post ECT.

**Conclusions:** Structural and functional neuroimaging studies support no evidence for brain damage during ECT. The ECT electrode placement is consistent with electrical field modeling given the burr hole setup. Focus on ECT stimulating electrode placement over coils obscures the more significant matter of anchoring for BF and RUL (if no ring-cap) as per electrical field modeling (Deng). This poster explores the induced electrical field, anchoring, DBS coils, and DBS device considerations for ECT in DBS patients.

**Research Category and Technology and Methods**

**Clinical Research:** 1. Deep Brain Stimulation (DBS)

**Keywords:** DBS, ECT, Monopolar, triple

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**P1.173**

**NON-INVASIVE SUPPRESSION OF ESSENTIAL TREMOR VIA PHASE-LOCKED DISRUPTION OF ITS TEMPORAL COHERENCE**

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**Abstract**

**Background:** Essential tremor (ET) is one of the most prevalent movement disorder, and is hallmarked by aberrant neural coherent oscillations in the cortico-cerebello-thalamo-cortico (CCTC) neuronal network. ET has been successfully treated using deep brain stimulation (DBS) but the application is constrained due to the requirement of brain surgery. Thus novel non-invasive methods for disrupting relevant neuronal coherent oscillations is required.

**Methods and results:** We firstly developed a novel approach in tracking the phase of neuronal oscillations in real time, which is named as end-point corrected Hilbert transform (eHT). By mitigating the Gibbs