

**Results:** Significant reduction of headache frequency and intensity was observed in 2 of 4 participants (responders). The responders were characterized by normal MMPI profile and, the same time, by lower baseline abilities for psychophysiological self-regulation. The non-responders had high MMPI profile (accentuation) and also higher abilities for psychophysiological self-regulation.

**Conclusions:** On the base of preliminary data, we suggest that neurofeedback may be feasible in TTH patients with lowered abilities for in psychophysiological self-regulation. Accentuation of personality traits may interfere with the efficacy of neurofeedback.

**Keywords:** tension-type headache; Neurofeedback; Personality; psychophysiological self-regulation

## EPP1088

### Symptom improvement is associated with serum cytokine level change during RTMS treatment in patients with treatment resistant depression

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**Introduction:** Repetitive transcranial magnetic stimulation (rTMS) is an effective and safety noninvasive technique for treatment of major depression disorder (MDD). There is a body of increasing evidences on the potential molecular mechanisms underlying its effectivity even in case of treatment resistant depression (TRD), however, the exact mechanism is still not clarified. Among multiple biological systems, inflammation can be a target of rTMS in MDD (Tian et al. 2020; Tateishi et al. 2020).

**Objectives:** Here we analysed serum cytokine levels in TRD before and after rTMS interventions.

**Methods:** We used bilateral stimulation (15Hz for left DLPC and 1Hz on the right side) in 18 patients with TRD (5 men and 13 women; mean age=47.7±12.1 year) for 2x5 days. Blood samples were collected before the first (V1) and after the last intervention (V2). Phenotypic changes were measured by Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Snaith–Hamilton Pleasure Scale (SHAPS), Insomnia Severity Index (ISI) and Stroop Color-Word Test (SCWT) modified by Golden. Inflammatory cytokines were assessed by ELISA assays.

**Results:** Change of BDI and BAI scores between V1 and V2 is associated with difference of TNFalpha levels (p=0.043; adj. R2=0.42 p=0.011; adj R2=0.43). Decrease on SHAPS score has been depended on IL-6 level (p=0.027) and the interaction of TNFalpha and IL-10 (p=0.005; adj R2=0.63). Sleep disturbance and neurocognitive function was not associated with cytokine levels.

**Conclusions:** Our results confirmed the association between depressive, anxious and anhedonia symptom improvement and inflammatory mechanisms during rTMS treatment. The study was supported by the OTKA 151513 grant.

**Keywords:** rTMS; TRD; Depression; noninvasive brain stimulation

## EPP1089

### Vagus nerve stimulation in treatment-resistant depression. Long-term clinical outcomes

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**Introduction:** Vagus nerve stimulation (VNS) is a neuromodulation technique approved for Treatment-Resistant Depression (TRD). Evidence regarding its long-term efficacy and safety is still scarce.

**Objectives:** To descriptively report a case series of 3 patients undergoing adjunctive VNS for TRD with an over 10-year follow-up.

**Methods:** We investigated outcomes of clinical interest in patients with ongoing VNS for at least 10 years after the device implantation. They had participated in a larger single-arm interventional study conducted at the University Hospital of Padua. They were diagnosed with chronic unipolar (1), recurrent unipolar (1), and bipolar (1) TRD.

**Results:** Our 3 cases had an average 14-year history of psychiatric disease before surgery. Afterward, all subjects achieved clinical remission within two years. 2 patients experienced relapses within the first 4 years of treatment (respectively, 1 and 2 episodes). The other case showed a recurrent trend of brief relapses every two years. Only 1 individual needed to be admitted to the psychiatric unit once. None of them committed suicidal attempts. Prescription of antidepressants remained almost unchanged after the first two years. 2 individuals improved and 1 maintained their working position. Common adverse events were voice alteration (3/3), neck pain (2/3), and cough (2/3).

**Conclusions:** Very few cases of 10-year VNS for TRD have been reported so far. For our subjects, VNS was most likely to have a major impact on the clinical course of the disease. This treatment can be a safe and effective adjunctive intervention in a subgroup of patients with TRD.

**Keywords:** VNS; VAGUS NERVE STIMULATION; DRUG-RESISTENT DEPRESSION

## EPP1091

### Effects of repetitive transcranial magnetic stimulation in the treatment of attention-deficit hyperactivity disorder: A case study

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**Introduction:** Although there are very effective treatment approaches for Attention Deficit Hyperactivity Disorder (ADHD) available, the clinical management has its limits making new treatment modalities a necessity. Evidence suggests that low frequency