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TRANSCRANIAL ELECTROSTIMULATION (TES) OF BRAIN OPIOID STRUCTURES (BOS): EXPERIMENTAL TREATMENT OF ALCOHOL WITHDRAWAL SYNDROME (AWS) AND CLINICAL APPLICATION.

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Numerous investigations on AWS have demonstrated a functional insufficiency in endogenous opioid systems. Since TES is a regime which selectively activates the BOS, our aim was to investigate the efficacy of non-invasive TES on ameliorating AWS. The method of Erickson et al. (Pharm. Bio. Behav., 13:781, 1980) was used to induce AWS and score withdrawal signs. TES induced an increase in the β -endorphin (BE) level in rat cerebrospinal fluid from 15.93 ± 2.17 , to 53.25 ± 6.1 pmol/L ($p < 0.01$) and met-enkephalin from 3.61 ± 1.39 to 7.86 ± 0.94 pmol/ml. Marked therapeutic effect of TES was also demonstrated in this animal model. Clinical double-blind placebo-controlled studies showed that TES of BOS was an effective method in the treatment of AWS in patients. After the TES treatment in AWS patients, the BE concentration in plasma rose from 5.86 ± 0.72 to 10.66 ± 0.63 pmol/L, $p < 0.01$. There was a three-fold increase of BE concentration just after one TES session. Small changes in the stimulating parameters results in reduction of both BOS activation and clinical efficacy.