

The transcutaneous auricular vagus nerve stimulation (taVNS) in treatment of depression and anxiety disorders in recovery patient with Feeding and eating disorders

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INTRODUCTION:

Feeding and eating disorders (FED) represent the psychiatric pathology with the highest mortality rate and one of the major disorders with the highest psychiatric and clinical comorbidity. The vagus nerve represents one of the main components of the sympathetic and parasympathetic nervous system and is involved in important neurophysiological functions. Previous studies have shown that vagal nerve stimulation is effective in the treatment of resistant major depression, epilepsy and anxiety disorders. In FED there are a spectrum of symptoms which with TaVNS therapy is possible to have a therapeutic efficacy.

MATERIALS AND METHODS: Sample subjects is composed by 10 female subjects aged $> 18 \pm 31$. Admitted to a community therapeutic facility having diagnosed (DSM-5) anorexia nervosa (AN) ($n = 7$), bulimia nervosa (BN) ($n = 2$), uncontrolled feeding disorder (DAI) ($n = 1$) Comorbidity: bipolar disorder type 1 ($n = 2$), bipolar disorder type 2 ($n = 4$), border line disorder ($n = 4$). The protocol included 9 weeks of Ta-VNS stimulation at a frequency of 1.5-3.5 mA for 4 hours per day. The variables detected in four different times (t_0, t_1, t_2, t_3, t_4) are the following: Heart Rate Variability (HRV), Hamilton Depression Rating Scale (HAMD-HDRS-17), Body Mass Index (BMI), Beck Anxiety Index (BAI).

RESULTS: Data analysis showed statistically significant differences between recording times ($p > 0.05$) in HAM-D ($t_0 = 18.28 \pm 5.31; t_4 = 9.14 \pm 7.15$), in BAI ($t_0 = 24.7 \pm 10.99; t_4 = 13.8 \pm 7.0$) the reported values show how during (T0-T4) the treatment there are a decay of the degree in the depressive state, in the state of anxiety and an improvement in the value of BMI. In particular, the

B.M.I in the AN-BN sub-sample had a minimum gain of 5% and a maximum of 11%. The analysis of H.R.V. did not show a clear changes among subjects thus confirming the discordance of the activity of the sympathetic and parasympathetic nervous system in FED.

Keywords: Feeding and eating disorders; Neurostimulation; Vagus Nerve, Anxiety disorders; Depression.



CONCLUSIONS: Although the sample does not possess a relevant value to determine long-term efficacy of Ta-VNS or on a larger population, this study reports how the application of neurostimulation in FED may become a further approach therapeutic. Indeed, substantial improvements are highlighted in the results and confirmed hypotheses proposed by the study.

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