#365 LONG-TERM EFFECTS OF NUCLEUS ACCUMBENS STIMULATION THROUGH TRANSCRANIAL PULSE STIMULATION IN TREATMENT-RESISTENT DEPRESSION: A CASE REPORT

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AS13 Non- and Less-Invasive Brain Stimulation

INTRODUCTION

The treatment of therapy-resistant depression is a major challenge in everyday clinical practice and affects about one third of all depressive patients[1]. Due to specific activation of the Ncl. accumbens by various stimulation methods such as deep brain stimulation (DBS) and transcranial magnetic stimulation (TMS), promising results have already been achieved in the treatment of even severely depressed patients[2].

METHODS

With the transcranial pulse stimulation (TPS), a new non-invasive CE-certified and MR-tracked brain stimulation method based on ultra-short ultrasound waves has recently become available, which can achieve a functional improvement in cognitive performance through mechanical transduction, especially in Alzheimer's disease[3]. We present a case report of an 82-year-old non-dement patient with severe, therapy-resistant depressive disorder who even didn't responded to multiple anti-depressants (including Esketamine) as well as ECT. The patient was informed about the TPS-treatment option and after obtaining his informed consent, he received 6 treatments sessions within two weeks, including 6000 pulses (0,2 mJ/mm^2 per single pulse, 4 Hz) per session (Fig. 1).

Fig.1 Brainstimulation through ultrasound pulses administered by the handpiece

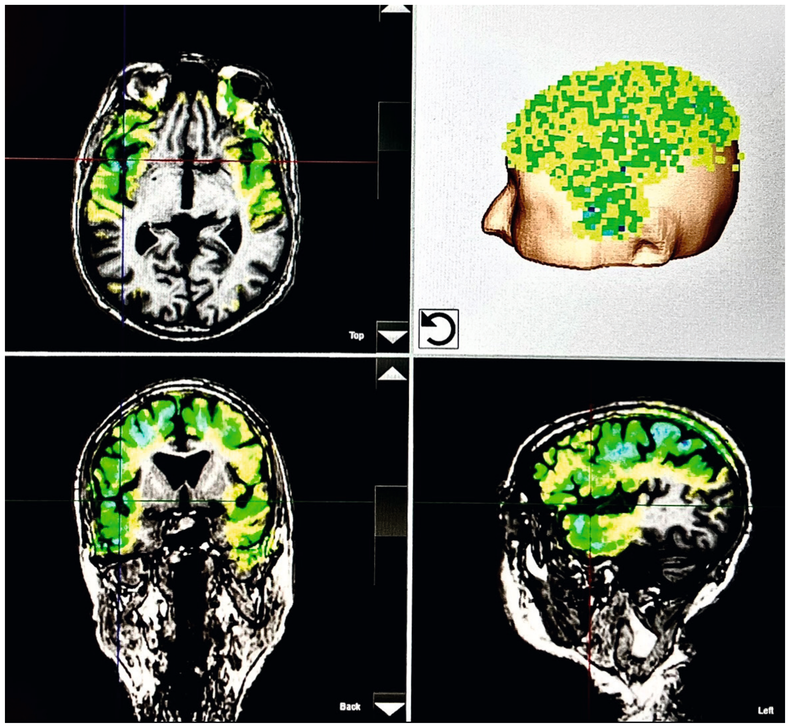

Fig.2 The application of the pulses was individually navigated by recent MR images of the patient (Fig. 2).

In addition to the known therapy-regime for Alzheimer's disease by stimulating bilaterally- frontal, -parietal, and –temporal cortex, we added 300 pulses to the shell of the Ncl. accumbens bilaterally, because of it's importance in the role of depression. Hereafter the patient received single TPS-treatmens every 4 weeks. Beck-Depression Inventory-II (BDI-II) is a questionnaire to monitor severity of depression and was collected before each TPS-follow-up session.

RESULTS

After the first 6 sessions within two weeks, the patient achieved full remission. In the outpatient follow-up report, the treating doctor documented the following: he is completely normal again, enjoys playing, is socially active and as if completely changed. In line with this, the BDI-II score dropped to 1 point. For more than a year now, the patient has been receiving regularly TPS-session every 4 weeks. He has since remained relapse-free and the BDI-II score has always stayed < 3 points in the follow-up examinations.

DISCUSSION

In accordance with the results of other brainstimulation methods (DBS, TMS), we were able to show that with the help of TPS, a full remission can be achieved in therapy-resistant depressive patients without any side effects.

CONCLUSIONS

Since this is a case report, the significance of the findings is limited, therefore studies with larger sample sizes are necessary to prove effectivenes in the treatment of depression.

LEARNING OBJECTIVES

1. Presenting innovative non-invasive brainstimulation procedures: showing alternative/additional stimulation methods to TMS.
2. To show various treatment options for TPS: expanding the treatment spectrum thanks to specific stimulation targets.
3. Identifying treatment alternatives for treatment-resistant depression: supplementing the range of treatment options by TPS.

#Brainstimulation #Depression #UltrasoundWaves #TPS #MR-Tracking #TherapyResistance

LITERATURE

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