REVOLUTIONARY ADD-ON THERAPEUTIC CONCEPT FOR ALZHEIMER DISEASE

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Until now many methods were tried to stimulate brain tissue to treat several neurological diseases. A recently developed Transcranial Pulse Stimulation device with NEUROLITH® provide more precise targeting and arranging intensity of shock waves. Transcranial Pulse Stimulation (TPS) has ability to reach deep target tissue due to conductivity effects. Here we want to share our experiences. TPS is a new ultrasound sonication technique, which was specifically developed for clinical applications and is based on single ultrashort ultrasound pulses (3 µs) repeated every 200–300 milliseconds. Ultrasound can be reliably targeted and is the first technique that allows non-invasive deep brain stimulation. The new TPS technique can be spatially distinct, highly focal, and is not restricted to superficial layers of the brain.

METHODS

We applied the treatment procedure of six sessions to 20 patients (12 women, 8 men). During this treatment procedure we kept their drug regime as they were using before.

Patients' relatives signed informed consent. We applied The Consortium to Establish a Registry for Alzheimer's Disease (CERAD) and Mini Mental State Exam (MMSE) tests before the treatment and 6 weeks after 6 sessions of treatment. During each session, we gave 6000 of pulse stimulations to the entire cortex with the navigation system of NEUROLITH® as recommended [2].

RESULTS

We compare the the results of tests and clinical observations of ours and care givers after all. Twelve of the patients were women (% 60) and 8 of the patients were men (% 40). Average age of all was 72.5; while the average age of women was 68.4; the average age for men was 78.6. The average neuropsychological test score before TPS was 30.55 in all patients (women 28, men 34,37); after TPS was 37.05 (women 33,3, men 38,87). As a result; the difference pre and post treatment sessions gives significant improvement ($p<0.001$). We haven't seen any side effect. We observed beneficial effects of TPS application in all of them with various degrees. All of the patients become more social and interactive with their family members.

GENDER	AGE	PRE-TPS	POST-TPS
M	82	41	65
W	72	40	47
W	61	19	23
M	88	39	48
M	60	17	26
W	59	26	30
W	61	29	32
W	75	35	41
W	68	18	32
M	85	52	56
W	51	22	30
M	71	34	41
M	74	25	30
M	76	36	42
W	81	37	42
W	73	37	39
W	69	7	10
W	84	45	51
W	67	21	23
M	93	31	33
MEAN	72,5	30,55	37,05

CONCLUSIONS

Transcranial Pulse Stimulation (TPS) is a revolutionary treatment option for neurodegenerative diseases. Our study showed promising therapeutic effects. Despite the improvement in the measurements made with neuropsychological tests, it will be beneficial to evaluate the subjective developments stated by the patient's relatives in terms of treatment. We need further placebo controlled studies of big cohorts. This therapy may be useful for other neurodegenerative diseases like Parkinson's Disease.

REFERENCES

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