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TREATMENT OPTIONS IN LATE PARKINSON`S DISEASE: DECIMETER WAVE THERAPY

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ABSTRACT

Late stage Parkinson`s disease (PD) is characterized by significant worsening of symptoms, motor fluctuations and decrease of effectiveness of drug therapy. Decimeter wave therapy (DWT) is one option to enlarge treatment strategy in late PD. We studied the effect of DWT in 12 patients (7 males), aged 65,83± 4,02 years, with 6,42± 1,51 years disease duration. Seven were at Hoehn- Yahr stage III and remaining 5 at stage IV. Mean UPDRS total score sum was 39,25± 1,91, and mean UPDRS part III sum was 24,67± 2,1. DMW was performed according to a standard protocol with apparatus Volna - 2, 10 consecutive procedures, once daily. Evaluation of UPDRS total and part III was performed on baseline, on days 11, 31 and 61. On day 11 all patients showed decrease in their both UPDRS total and part III. We lowered the levodopa doses of 6 patients in Hoehn- Yahr stage III with greatest decrease of UPDRS. On days 31 and 61 UPDRS total and part III were still lower. Our results demonstrate substantial effect of DWT on motor symptoms in late PD patients. All patients showed improvement, assessed by UPDRS, as the effect still lasted for 2 months after the physical therapy, even slightly diminished on day 61, compared to day 11. According to our results and patients subjective satisfaction reported, we could propose DWT become a part of the treatment strategy in late PD patients.

Key words: Parkinson`s disease, treatment, physical therapy, decimeter waves therapy

INTRODUCTION

Late stage Parkinson`s disease (PD) is characterized by motor fluctuations, dyskinesias and nonmotor off phenomena. Levodopa, the "gold standard" drug therapy, diminishes its efficacy and starts displaying side effects.
Adjunctive therapy with dopamine agonists, COMT and MAO B inhibitors, and amantadine is needed in order to influence motor symptoms and delay the increase of levodopa doses.
Physical therapy is another option to achieve such goals. Spectrum of methods is applied in the treatment of neurodegenerative diseases. Decimeter waves therapy (DWT) is one of possibilities as supplementary therapy in late stage PD (1,4).

AIM

Assessment of the efficacy of DWT in late PD.

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SUBJECTS AND METHOD

Twelve patients were included in the study (7 males), aged 65,83± 4,02 years, with 6,42± 1,51 years disease duration. Seven were at Hoehn- Yahr stage III and remaining 5 at stage IV (3,42± 0,52). Mean UPDRS total score sum was 39,25± 1,91, and mean UPDRS part III sum was 24,67± 2,1. Patients were on stable doses of levodopa (1150± 192,77 mg) and dopamine agonist pramipexole (3 mg).
All patients signed informed consent.
DWT was performed according to a standard protocol with apparatus Volna - 2. Ten consecutive procedures were applied, once daily, from 6 to 8 minutes duration with graduated augmentation, olygothermic doses were used 20- 40 W. The emitter was placed horizontally on 5 cm over the skin in the occipital region.
Evaluation of UPDRS total and part III was performed on baseline, on days 11, 31 and 61.

RESULTS

All 12 patients completed the study. Procedures were well tolerated, no side effects occurred.

On day 11 all patients showed decrease in their both UPDRS total and part III points (table 1). We lowered the levodopa doses with 112,5± 20,92 mg of 6 patients in Hoehn- Yahr stage III with greatest decrease of UPDRS. On day 31 and 61 UPDRS total and part III were still lower than on baseline (table 1).

Table 1. UPDRS total and part III comparative values for baseline and days 11, 31 and 61

UPDRS values	Baseline	Day 11	Day 31	Day 61
UPDRS total	39,25 ± 1,91	31,92 ± 2,58	33,3 ± 3,11	35,17 ± 2,95
UPDRS part III	24,67 ± 2,1	17,58 ± 2,39	19,67 ± 2,64	20,58 ± 2,78

On day 61 the point reduction of UPDRS total score (UPDRS t 61) was 7,54%± 2,11% and of UPDRS motor score (UPDRS m 61) was 16,77% ± 5,83% (Fig. 1 and 2).

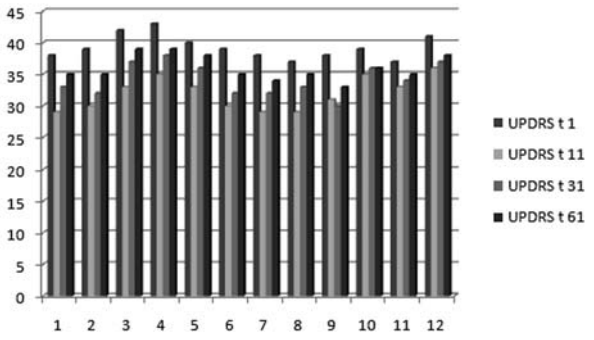

Fig. 1. UPDRS total score values on baseline and on days 11, 31 and 61

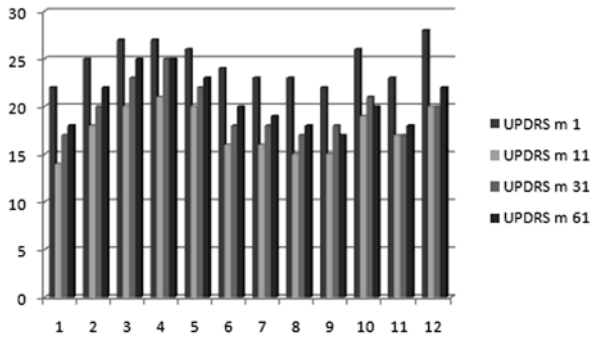

Fig. 2. UPDRS motor score values on baseline and on days 11, 31 and 61

DISCUSSION

Our results demonstrate substantial effect of DWT on motor symptoms in late PD patients. All patients showed improvement, assessed by UPDRS, as the effect still lasted for 2 months after the physical therapy, even slightly diminished on day 61, compared to day 11.

Enormous progress has been made in the treatment of Parkinson's disease, but many challenges still remain. Although levodopa is the most effective symptomatic therapy, a majority of patients start to experience side effects. After the initial "honeymoon" period, which lasts usually 3-5 years and during which PD symptoms are generally well controlled, most patients eventually develop levodopa-related complications, particularly motor fluctuations and dyskinesias (2).

All this imposes the search of new therapeutic strategies. To the extent that neuroprotection slows or halts the progression of the disease, it must be implemented early. Although a true neuroprotective drug is not yet available, there are several guidelines that can be recommended for the initial phases of PD therapy designed to minimize the risks of complications from chronic levodopa therapy. Antioxidants, antiexcitatory drugs, and dopamine agonists, have been postulated to exert a neuroprotective effect, largely based on current hypotheses about the mechanisms of cell death and neurodegeneration (2,5).

The role of physical therapy and rehabilitation is well known in PD, but the spectrum of techniques may be successfully enlarged with the introduction of DWT as routine therapeutic option in late PD (3,5,6,7).

CONCLUSION

According to our results and patients subjective satisfaction reported, we could propose DWT as a part of the treatment strategy in late PD patients.

DWT is a non-invasive, well tolerated technique of brain stimulation based on electromagnetic induction, which have been used in PD patients and have been suggested as possible therapeutic tool. In patients with late PD when drug treatment tends to become limited over the years, and the neurosurgical procedures are still costly and invasive, non pharmacological approaches could gain their place as supplementary treatment options.

REFERENCES

1. Andreeva, V., Danilova, D. Effect of decimeter-wave therapy on the bioelectrical activity of the brain of patients in the recovery period after reconstructive operations on the cerebral vessels. *Vopr Kurortol Fizioter Lech Fiz Kult.* 1985, **6**, 33-7.
2. Fregni, F., Simon, D., Wu, A., Pascual-Leone, A. Non-invasive brain stimulation for Parkinson's disease: a systematic review and meta-analysis of the literature. *J Neurol Neurosurg Psychiatry.* 2005, **76**, 1614-1623.
3. Musaev, A. Electroneuromyography evaluation of the effectiveness of the decimeter-wave therapy of patients having had a stroke. *Vopr Kurortol Fizioter Lech Fiz Kult.* 1985, **6**, 29-33.
4. Strelkova, N. Decimeter waves in complex treatment of patients with cerebral blood circulation insuf-

ficiency. *Vopr. Kurortol., Fizioter. Lech. Fiz. Kult.* 1995, **2**, 28- 31.

5. Strelkova, N., Zeinalov, R. Correlation of biochemical findings and the state of the neuromuscular apparatus in patients with parkinsonism during use of decimeter wave therapy. *Zh Nevropatol Psikhiatr Im S S Korsakova*. 1973, 73, 2, 216-20.
6. Strelkova, N., Zeinalov, R. Decimeter waves and sulfide baths in the treatment of parkinsonism. *Vopr Kurortol Fizioter Lech Fiz Kult.* 1981, **4**, 44-7.
7. Tian, D., Luo, J., Zhang, Q., Zhang, Y., Liu, K., Yu, K., Han, J., Han, J. Effects of decimeter wave and sodium hyaluronate product on postoperative adhesions in flexor tendon. *Zhongguo Xiu Fu Chong Jian Wai Ke Za Zhi.* 2008, **22**, 11, 1318-22.