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Can bilateral subthalamic deep brain stimulation reserve working abilities in Parkinson's disease?

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Objectives: There is a debate on the potential advantageous effects of bilateral subthalamic deep brain stimulation (DBS) in the treatment of Parkinson's disease with early fluctuations. Our investigation aimed to evaluate if DBS therapy was able to preserve the working capabilities.

Materials & methods: We reviewed the data of 40 young (<60 year-old) PD patients who underwent DBS implantation at University of Pécs and had an at least 2 years follow-up. Patients were categorized into two groups based on their working capabilities at time of surgery: 'Active job' group (n = 20) and 'No job' group (n = 20). Baseline characteristics were comparable. Severity of motor symptoms (UPDRS-3), quality of life (EQ-5D) and presence of active job were evaluated preoperatively and 2 years postoperatively.

Results: Although similar (approximately 50%) improvement was achieved in the severity of motor and major non-motor symptoms in both groups, the postoperative quality of life was significantly better in the 'Active job' group (0.687 vs. 0.587, medians, $p < 0.05$). Majority (80%) of 'Active job' group members were able to preserve their job 2 years after the operation. However, only a minimal portion (5%) of the 'No job' group members was able to return to the world of active employees ($p < 0.01$).

Conclusions: Although our study has several limitations, our results suggest that in patients with active job the appropriately 'early' usage of DBS might help preserve working abilities in a two-year time-frame and gain higher improvement in quality of life.

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High frequency repetitive transcranial magnetic stimulation can improve depression in Parkinson's disease

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0022-510X/\$ – see front matter.

Background: There are inconsistent data on the efficacy of bilateral repetitive transcranial magnetic stimulation (rTMS) over the motor cortex on depression associated with Parkinson's disease (PD). Therefore, we conducted a randomized, double-blind, placebo-controlled study to evaluate this hypothesis.

Methods: Forty-six patients with PD and mild-moderate depression randomly assigned to active (n = 23) and sham (n = 23) rTMS. Two patient in the sham group did not complete the protocol because of reasons unrelated to the study. High frequency rTMS was applied over the primary motor cortex bilaterally for 10 days. An investigator blinded to the treatment performed three video-taped examinations on each patient: before stimulation (baseline), 1 day (short term), and 30 days after treatment session ended (long-term effect). Primary endpoint was the changes in depression while secondary endpoints included health-related quality of life scales and Movement Disorders Society Unified Parkinson's Disease Rating Scale (MDS-UPDRS).

Results: In the actively-treated group not only the severity of depression (from 17 to 7 points, Montgomery–Asberg Depression Rating Scale, median values, $p < 0.001$) improved, but also the health-related quality of life (from 25.4 to 9.6 points, PDQ-39 summary index, median values, $p < 0.001$). Besides, we could also demonstrate an improvement in MDS-UPDRS Motor Examination. In the sham-treated group none of the examined tests and scales improved significantly after sham stimulation.

Conclusions: Our results demonstrate the beneficial effects of high frequency rTMS over the motor cortex on depression and health-related quality of life in PD. However, this result should be confirmed in patients with severe depression by further clinical trials.

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In vivo-morphology of ocular changes in patients with Parkinson's disease

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Background: Parkinson's disease (PD) is known to produce alterations in dopaminergic neurons in human retina. Recent reports showed a decrease in retinal thickness and selective retinal layers.

Objective: To investigate macular and optic nerve (ON) morphology in PD comparing the eyes on the "more" or "less" affected sides and healthy controls using optical coherence tomography (OCT).

Methods: High-resolution spectral domain OCT was used to image 25 patients with PD and 25 healthy controls. RT and macular RNFL thickness and ON parameters were measured using automated software. Retinal layers segmentation analysis was performed with ImageJ.

Results: Macular segmentation analysis showed thinner retinal nerve fibre layer (RNFL) in temporal ($p = 0.015$) and central ($p = 0.02$) areas; outer nuclear layer (ONL) – in all analysed areas ($p < 0.001$ for all) and retinal pigment epithelium (RPE) – in nasal ($p = 0.001$) area and centrally ($p = 0.04$). Maximal optic nerve cup depth was statistically larger in PD patients with associated peripapillary RNFL thinning in all segments.

Conclusion: Our study confirms previous histological and electrophysiological findings of abnormal retina in PD. We demonstrated significant thinning of the RNFL, ONL and RPE in patients with PD. RPE thinning could be related to dopamine deficiency. We also describe for the first time optic nerve abnormalities in PD. In addition, we describe for the first time changes of the optic nerve. The macular structure in PD patients indicated the most significant difference between the eyes on the side with less severe neurological deficit and healthy controls.

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The clinical utility of [¹²³I]-FP-CIT SPECT in tremor type versus non-tremor type clinically uncertain Parkinsonian syndrome

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Background: [¹²³I]-FP-CIT SPECT has been approved to differentiate essential tremor from tremor due to Parkinsonian syndromes. Although off-label use is not uncommon, the utility of [¹²³I]-FP-CIT-SPECT in non-tremor type Clinically Uncertain Parkinsonian Syndrome (CUPS) has not been well established.

Objectives: To assess if the use of [¹²³I]-FP-CIT-SPECT would lead to changes in clinical management and diagnosis in patients presenting with tremor type versus non-tremor type CUPS.

Patients and methods: We retrospectively reviewed clinical records of all patients with [¹²³I]-FP-CIT-SPECT obtained at our institution between January, 2012 and March, 2014. The study was approved by the local institutional review board.

Results: Thirty-eight consecutive patients with [¹²³I]-FP-CIT-SPECT images were analyzed. Prior to the [¹²³I]-FP-CIT-SPECT scans, 27 were classified as CUPS, and 11 as a clinically certain Parkinsonian syndrome (CCPS) including Parkinson's disease ($n = 8$), progressive supranuclear palsy ($n = 2$) and multiple system atrophy ($n = 1$). Ten (91%) of the 11 CCPS patients and 15 (56%) of the 27 CUPS patients had abnormal [¹²³I]-FP-CIT-SPECT indicating presynaptic dopaminergic deficiency ($\chi^2 = 4.34$, $p = 0.04$). Of the 27 CUPS patients, 13 presented with a tremor syndrome (54% with abnormal scan), and the remaining 14 patients presented with a non-tremor syndrome (57% with abnormal scan) ($\chi^2 = 0.03$; $p = \text{NS}$). A change of diagnosis or management followed in 85% of tremor type CUPS and in 93% in non-tremor type CUPS patients.

Conclusions: This study suggests that [¹²³I]-FP-CIT-SPECT may contribute to changes in clinical management and diagnosis in both tremor type and non-tremor type CUPS.

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Cognitive assessment in multiple system atrophy cerebellar type

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Background: Multiple system atrophy (MSA) type C is a rare, sporadic, progressive, neurodegenerative disease. Oligodendrocyte cytoplasmic inclusions of fibrillized alpha-synuclein represent the hallmark of the disease. Dementia is considered an exclusion criteria, but MMSE is abnormal in 26% of the patients. Executive dysfunction is the most common presentation, but memory or visual spatial functions may also be impaired.

Objective: To assess multiple, domain-specific cognitive functions in patients with the cerebellar type of MSA (MSA-C) and to compare them with normal controls and Parkinson's disease (PD) patients.

Patients and methods: We included patients with probable MSA-C, PD and normal controls, matched by age, sex and scholasticity. We performed the following tests: The Montreal Cognitive assessment (global assessment); Naming Nouns and Pointing (language); Raven Colored Progressive Matrices (fluid intelligence); Symbol Digit Modalities Test, Trail Making Test, Phonetic and Semantic Fluencies (executive functions); Digit Span, Modified 10/36 Special Recall Test, Rey Auditory Verbal Learning Test (memory); Segment Length Discrimination, Mental Rotation (Visuospatial functions).

Results: We enrolled 20 MSA-C, 20 PD patients, and 20 normal controls (age, sex and scholasticity matched). The most frequent finding in MSA-C patients was an impairment of the executive functions, followed by attention and memory and visuospatial impairment. The impairment of the executive functions was more severe in MSA-C than in PD patients.

Conclusions: Global cognitive impairment is uncommon in MSA-C but executive functions are frequently impaired.

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Clinical presentation and genetic characteristics of Huntington's chorea in Croatia

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Background: Clinical presentation, genetic characteristics and disease evolution of patients with Huntington's chorea (HC) from Croatia, constituted from Slavic population, is still unknown, since most data are in the form of case reports.

Objective: To report our experience over 30 years with patients with HC in Croatia

Patients and methods: The clinical records of ninety-five patients with HC were reviewed. Data were collected for periods of 30 years (14 years prior and 16 after the introduction of genetic testing for HC).

Results: The mean age at the disease onset was 36.5 (11.7) years. Adult onset HC was the most common while juvenile HC was observed in only 7% of patients. Chorea was the most common presenting symptom (69%) and 20% of these patients were characterized as spinal pathology at the beginning of the disease. Psychiatric disturbances as presenting symptoms (depression, psychosis) were present in 31% of patients. Juvenile patients presented as rigid type, vocal tics and myoclonus. The mean number of CAG repeats was 45.9 (range: 33–69