

Posters



Basal Ganglia

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The basal ganglia are responsible for motor control, motor learning, executive functions, behaviour and emotions. DTI-based tractography allows us to visualise neural tracts and see specific connections to the cortex and other structures in the brain. This will help us to better understand the function of the basal ganglia and see differences between the sides of the brain. The aim of this study was to visualise neural tracts in basal ganglia in healthy participants and to compare statistical parameters of neural tracts from left and right side of the brain to determine laterality. Subject underwent MRI examinations on a 3T MR scanner (Siemens Magnetom Trio, Erlangen, Germany) at IKEM (Institute of Clinical and Experimental Medicine). DTI data were reconstructed in DSI Studio software. We selected to reconstruct neural tracts in the caudate nucleus, the putamen and the Globus pallidus. We chose to study structures of the left hemisphere and right hemisphere separately for further analysis. Regions representing the selected basal ganglia were loaded from a provided atlas (Harvard Oxford Sub) and afterwards manually corrected according to its proper anatomical position specified by a neuroanatomist in all dimensions on T1 weighted images. Fiber tracking was performed and reconstructed neural tracts were analysed. Following statistical parameters were obtained: number of tracts, tract length, tract volume, quantitative anisotropy, generalised fractional anisotropy and normalised quantitative anisotropy. We found laterality in the basal ganglia with higher statistical parameters in the left side of the brain. These results indicate that the dominance of the left basal ganglia might be connected with the patients being right-handed. Results of this study will be used as a preliminary study in further research of basal ganglia for pathology (Parkinson disease).

Biography

Jana Mrzilkova is neuroanatomist working at the Institute of Anatomy, Third Faculty of Medicine in Charles University, Czechia. She is focused on micro CT imaging of soft tissues, especially brain, vasculature and blood supply of visceral organs.

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Accepted Abstracts



Less Pulsatile Levodopa Therapy reduced risk of Dyskinesia

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Statement of the Problem: Levodopa is a standard treatment for Parkinson disease (PD). However, its long-term therapy is associated with motor fluctuations and levodopa induced dyskinesia (LID). One of prime causes of these motor complications is pulsatile dosing related to the short half-life of levodopa. Currently, the common method of starting levodopa is to administer it three times daily. We have evaluated whether less pulsatile levodopa therapy can reduce the development of LID.

Methodology & Theoretical Orientation: We conducted a retrospective cohort study of patients with Parkinson's disease at the movement disorders clinic of Medstar Washington Hospital Centre. Patients were treated with less pulsatile (3-hour interval, 6 doses daily) levodopa between August 2002 and August 2018.

Findings: Ninety-five patients with PD taking levodopa were divided into two groups: 1. Levodopa naïve patients who were started on less pulsatile levodopa therapy (LPT) or who switched from traditional therapy (n=61) (mean disease duration 7.7 ± 4.8 , mean levodopa duration 5.6 ± 4.5 and mean observation 4.3 ± 3.4 years), and 2. patients on traditional therapy (TT) throughout the observation time or until LID appeared (n=34) (mean disease duration 8.3 ± 3.8 , mean levodopa duration 6.2 ± 4.2 and mean observation 4.1 ± 3.4 years). Three of the 61 LPT patients developed LID during the observation period (One of them developed LID after unintended short-term exposure to pulsatile doses). In contrast to this less than 5% LID incidence, dyskinesia occurred in 50% (seventeen of 34) of TT patients, an incidence similar to that seen in published data ($P < 0.001$).

Conclusion & Significance: Less pulsatile levodopa with 6 daily doses was associated with a very low incidence of LID. Until the development of improved levodopa formulations which eliminate pulsatile blood levels, the LPT method deserves further use in patients able and willing to comply with the inconvenience of frequent doses.

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Quality of life in patients with Parkinson's disease assessed in a University Hospital in Bogotá, Colombia

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Parkinson's disease is the second most frequent neurodegenerative disease, and its incidence and prevalence increase with age. Although the treatment can improve patient's symptoms and quality of life, this disease continues to generate progressive disability. Objective: To describe the performance of quality of life in the context of socio-demographic and clinical factors through MDS UPDRS, Hoehn and Yahr and PDQ-39, in patients with Parkinson's disease treated at San José Hospital, Bogotá, Colombia. Patients and methods: Scales were administered to patients with a diagnosis of Parkinson's disease. Socio-demographic data and some important clinical variables were collected. Socio-demographic and clinical characteristics were correlated with PDQ-39; the Hoehn and Yahr Scale with the MDS UPDRS and the PDQ-39; and finally, the MDS UPDRS Scale with the PDQ-39. Results: The characteristics associated with the worst scores in the PDQ-39 Scale are the need for a caregiver, longer time of disease progression, and high scores in parts i and ii of the MDS UPDRS scale. Conclusions: There are socio-demographic and clinical factors that are involved in the deterioration of patients' quality of life. Drug treatment must be adjusted in such a way that patient's independence and the ability to carry out all the activities of daily life are taken into account, while continuing searching for non-motor symptoms for adequate management.

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Putting patients at the centre of Parkinson's studies

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Looking at 2019 and beyond it is critical that we take a patient-centric approach to healthcare studies and clinical trials. Unfortunately, historically patients have come second to the desired results and outcomes. uMotif has put patients at the centre since its founding in 2012, initially focusing on Parkinson's patients. Our technology is designed with patients for patients. In talking with people who are enrolled in studies we ensure that our applications are easy to use and provide value back to patients. Taking a patient-centric approach not only helps patients and the quality of care they are to receive but it's proven to improve outcomes and enhance research data sets. During this session case studies will be discussed to highlight learnings from our work over the last seven years. We will draw from strong experience in large Parkinson's projects: Smart-PD and 100 for Parkinson's. Lessons will be shared about how to design and implement a project using patient-centric technology.

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The role of dysfunctional mitochondria in the development of Parkinson's disease

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Statement of the Problem: Parkinson's Disease is the second most common neurodegenerative disorder in the world. It is thought to occur due to degradation of dopaminergic neurons within the substantia nigra pars compacta of the basal ganglia. This paper elucidates on a theory that one potential reason for Parkinson's developing is due to problems with mitochondria.

Methodology & Theoretical Orientation: A literature review of 2 web databases (PubMed, Web of Science) yielded the papers which were used in this review.

Findings: The problems with mitochondria are thought to come by a variety of factors. Factors offered in this paper include the mutation or absence of parkin or PINK1 genes. This alteration in parkin and PINK1 leads to changes in the mitochondria which are present in the human body. These can lead to compromised complex activity and increased oxidative stress. Increased oxidative stress (via free radicals or reactive oxygen species) can lead to deletion of mtDNA (with mitochondria having its own genome). The deletion of mtDNA is a problem as it is known to be one of the factors leading to Parkinson's.

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Neuroscience- Management of Sialorrhea in people with Parkinson's disease through Behavioural Therapy and Thermo-Tactile Stimulation

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Sialorrhea (saliva production perceived by patient as excessive) is one of the non-motor manifestations of Parkinson's disease (PD) mostly found at late stages of the disease. In one study, 46, 5% of patients with PD who complained about drooling also suffered swallowing problems of which 18, 8% thought that it was socially disabling. The present study was mainly designed to evaluate the effectiveness of an alternative non-invasive management approach involving speech therapy for individuals with sialorrhea as a consequence of PD. For this purpose, we evaluated the effectiveness of 2 approaches to reduce sialorrhea, Thermal-Tactile Stimulation (TTS) and Cognitive Behavioral Treatment (CBT)

Methodology: For this prospective cohort study, 18 individuals with PD were recruited and divided randomly into two groups. The first one received only CBT while the other received CBT plus TTS. The saliva produced by the individuals during 5 minutes after the stimulation session ended was collected using graduated tubes that were weighed. We also evaluated the perception of sialorrhea using the Clinical Scale of Sialorrhea for Parkinson's (SCS-PD). Both types of measurement were made at the beginning of the study and after 5 weeks of therapy. A T-student parameter test and the Mann-Whitney test were used to compare results.

Results: The difference observed in the measurement of saliva secretion before and after treatment in both groups was not statistically significant (Fig. 1). Neither was the difference on the scores of the SCS-PD between the CBT group and CBT plus TTS group. However, there was a statistically significant decrease in the scores comparing baseline and end line measurements in both groups ($p < 0.001$).

Conclusions: Both treatments are effective to decrease sialorrhea perception with no significant differences between both types of treatments. An alternative non-invasive approach may be suggested to individuals who suffers sialorrhea secondary to PD.

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