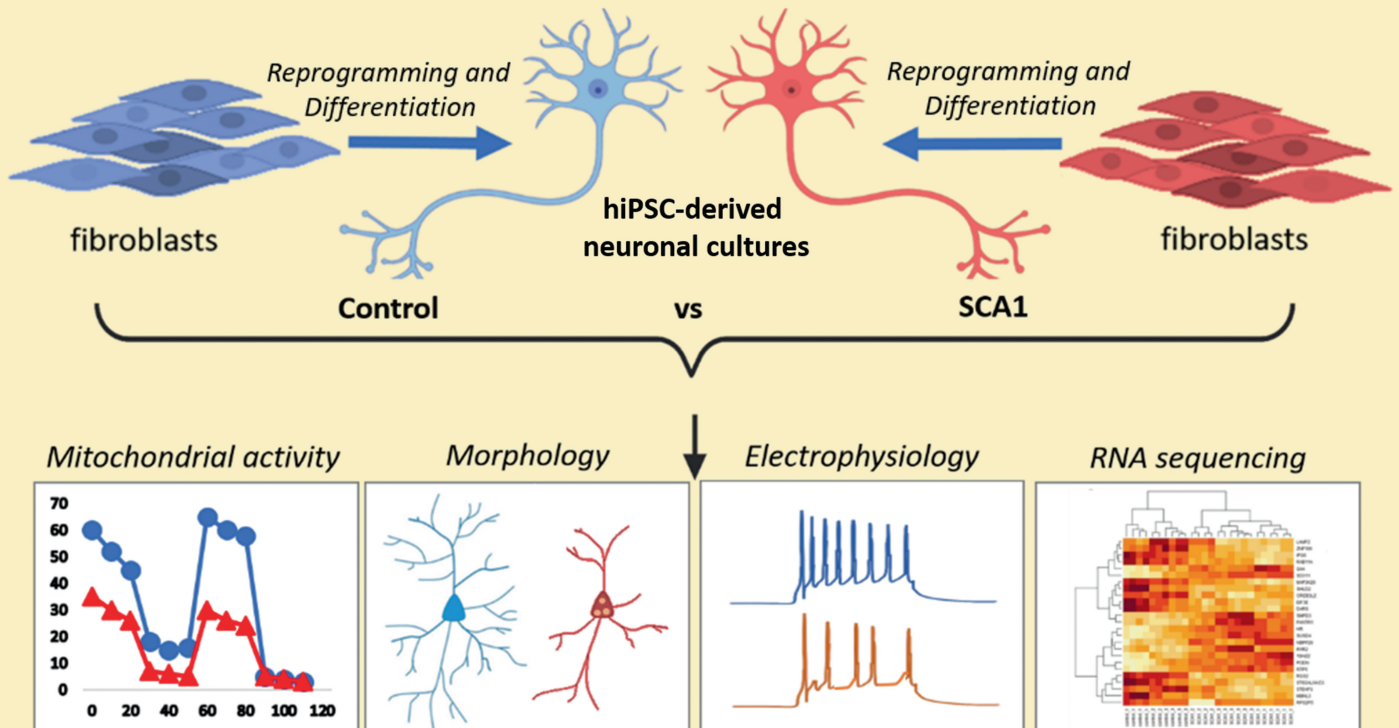




Movement Disorders

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Spinocerebellar ataxia type 1 characteristics in patient-derived cultures



299

Vaccination from Covid-19 in people with Parkinson's disease

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Objective: To assess safety and efficacy of COVID-19 vaccines against SARS-CoV-2 in people with Parkinson's disease.

Background: Different forms of vaccines have been developed to prevent the SARS-CoV-2 virus and subsequent COVID-19 disease. These vaccines can help to mitigate risk of becoming infected with SARS-CoV-2, which can lead to serious, life-threatening disease to people with Parkinson's disease.

Methods: The study included patients with Parkinson's disease who received a full course of vaccination, including a booster dose of the

vaccine. All patients were followed up for 6 months after receiving a booster dose

of the vaccine. We collected patient data using a standard form. The form contained

questions about patient demographics, current anti-Parkinson's drugs, and information about vaccinations and side effects.

Results: A total of 38 people with PD participated in the study. Of the 38 patients, 23 (60.5%) were male and the remaining 15 (39.5%) were female. In addition, general and local post-vaccination side effects were observed in patients. When receiving the first two doses most commonly reported adverse events were (in descending order) headache, fatigue, myalgia, fever and chills. Of the local reactions in patients, pain, redness and itching were observed at the injection site. All common and local reactions were mild and resolved within 7 days after receiving the vaccine. When receiving booster dose of vaccine after 6 month, common adverse events were headache and fatigue; local reactions were pain and redness. All common and local reactions resolved within 3 days after receiving booster dose of vaccine.

Conclusions: Several neurological complications have been reported following SARS-CoV-2 vaccination, without a clear causal relationship ever being verified, including some cases of worsening PD symptoms. In our study all common and local adverse events were transient and benign nature. Deteriorated PD symptoms and new-onset movement disorders following vaccination were not observed.

300

Gait during turning associates with imbalance and falls in PD: 3D Video based analysis from a single camera

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Objective: This study aimed to investigate the relationship between gait parameters during turning and postural imbalance and falls in Parkinson's disease (PD).

Background: It is widely recognized that impaired gait during turning is associated with falls in PD patients. However, conventional gait analytic tools including pressure mat systems cannot provide comprehensive gait analysis during turning.

Methods: We prospectively enrolled early or de novo PD patients at the Seoul National University Hospital outpatient clinic from March 2022 to February 2023. We collected clinical variables including age, sex, and disease duration and evaluated them using the MDS-UPDRS scale. All participants underwent previously established 3D video-based gait analysis using a single RGB camera (*Gaitome*) and balance analysis (*Pedoscans* system). Participants were instructed to walk (forward, turn 180 degrees, and walk back) in a 7-meter walkway five times. Gait phases were segmented into straight walking and turning phases, and turning time and number of steps were automatically calculated. We analyzed the correlation of turning-related gait parameters with center of pressure (COP) deviation measured from the *Pedoscans* system.

Results: We enrolled 26 PD participants in the study. The mean age was 72.35 ± 13.04 , with a disease duration of 2.31 ± 1.49 . Mean turning time correlated with static and total COP movement ($R = 0.55$, $p = 0.010$), and mean step length during turning correlated with total COP movement ($R = -0.77$, $p = 0.039$) on *Pedoscans* analysis.

Conclusions: Our study showed that turning-related gait variables estimated by video-based gait analysis were significantly correlated with postural instability. Future studies should investigate different clinical

syndromes with postural instability and differentiate subtypes of parkinsonian syndrome.

301

Validating wearable sensors as an assessment tool for Parkinson's Disease

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Objective: The objective of our pilot study was to assess the feasibility of using a portable accelerometer system to accurately identify motor findings in patients with Parkinson's Disease (PD). A second objective was to identify novel motor tasks tailored to the sensor system that could aid in remote detection of rigidity and prediction of freezing of gait (FOG).

Background: PD is largely considered a clinical diagnosis, but even in experienced movement disorder neurologist hands, accuracy is not 100%. Objective measurement using accelerometry has been increasingly recognized as a complementary diagnostic and research tool.

Methods: Six PD patients and five age-matched controls participated. Participants wearing the accelerometers were guided through the Movement Disorders Society Unified PD Rating Scale (MDS-UPDRS) examination while a board-certified movement disorder neurologist completed an independent assessment.

Two supplemental tasks were created to complement the standard assessment, Wrist rotation (WR) and Metronome-guided foot tapping (MGFT). These tasks were created to assist in an effort to develop tasks that could be performed in a standardized fashion and employed in remote visits (i.e. telehealth). Unpaired t-tests, ANOVA and linear regression analyses were calculated for data analysis.

Results: Our preliminary analysis yielded the following:

- Mean stride length strongly correlated with total MDS-UPDRS part 3 motor scores and exhibited a strong negative correlation with FOG item on the UPDRS ($R^2 = 0.6739$, $m = -0.17$, $p = 0.0067$).

- Wrist Rotational area was reduced in PD patients compared to controls (576 vs 1729 mm^2 $p = 0.026$).

- PD patients had greater variability in rotation when performing wrist pronation-supination (Standard deviation of PD vs control: 8.28 vs 2.54 degrees, $p = 0.038$).

- With metronome guided foot tapping, PD patients trended towards a larger variation or standard deviation of beat timing than control participants ($p = 0.09$).

Conclusions: Using portable sensors, we were able to identify differences in motor function between PD patients and controls. These data serve as a proof of concept that wearable technologies may assist in the diagnosis and monitoring of PD progression, even remotely. Larger numbers of participants will need to be assessed to further define the medical potential of accelerometer sensor systems.

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302

Empowerment of people with Parkinson's disease: development, testing and evaluation of a cross-sectoral, intervention-based self-management program

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Objective: The overall purpose of this study is to develop, test and evaluate the results of a self-management program targeted PwP with the aim of empowering both PwP and caregivers.

Background: Living with Parkinson's disease (PD) involves living with a variety of symptoms, each of which affects many aspects of everyday life and quality of life (QoL). To support People with PD (PwP) and their caregivers to develop skills and provide them with tools to adapt to life with PD, increase QoL, as well as promote self-management, there is a need for education in all aspects of the disease, including psycho-social aspects.