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Driving abilities in Parkinson's disease patients with wearing-off and the impact of add-on therapies

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Introduction: Progressive impairment of motor and cognitive abilities due to Parkinson's disease (PD) can lead to an alteration of driving performances, but little is known about the determinants of impaired driving abilities and whether dopaminergic therapy can improve driving performances [1,2].

Objective: The aim of this study is to evaluate the driving skills of PD patients, the impact of wearing-off and the effect of add-on therapies on driving performances on a driving simulator. EEG data have also been collected through EEG.

Methods: Twenty patients with PD on chronic levodopa therapy and with the recent add-on therapy due to wearing-off were recruited. Driving abilities were tested through a driving simulator (City Car Driving software and logitec driving). The software simulates city roadways with traffic lights, cars, and pedestrians. An assessment of motor impairment (UPDRS), cognitive ability (MOCA) and wearing off (questionnaire) and actual driving abilities were performed [3]. Patients were then evaluated for driving performances and learning curves during their best on time (V1) and during their wearing-off time (V2) on a standardized path.

Results: Mean Hoehn and Yahr was of 2±0.5, MoCA of 25 ± 2.5, UPDRS III of 17 ± 5 and LEDD of 800±230. Add-on therapies were iMAO, Dopamine agonists, amantadine and iCOMT. Basal driving history assessment revealed driving troubles increasing with disease staging, age independently. Motor and cognitive features related to the DS score and with learning curves ($p<0.01$). Wearing off were featured by worst driving performances ($p<0.01$), iCOMT were associated with a lower degree of wearing off and higher driving performances and learning curves during the wearing off time ($p<0.05$). EEG analysis is currently ongoing.

Conclusions: PD features are associated with driving impairment. The relationship between PD and driving might be influenced by fluctuations and therapies. However, the potential negative impact of therapies (ie, somnolence, impulsivity) should also be evaluated.

References:

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