

**Exploring the relationship between eye movements and levodopa long duration response in drug-naïve Parkinson's disease patients**

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*Introduction:* In Parkinson's disease (PD) eye movement quantitative assessment demonstrated both saccadic and smooth pursuit movements abnormalities. Levodopa treatment exerts a reciprocally influenced Short and Long Duration Response (SDR and LDR). To date, only the effects of SDR on eye motility was investigated, reporting conflicting results.

*Objective:* Aim of this pilot study was to investigate possible associations between eye movement parameters evaluated during SDR assessment and later achievement of sustained LDR.

*Methods:* In drug-naïve PD patients, SDR and LDR were assessed using a standardised protocol. Eye movements were recorded by Eyelink-1000 Plus. Horizontal and vertical visually-guided saccades as well as horizontal and vertical smooth pursuit movements were assessed at baseline and after 2-hours from administration of Levodopa/Carbidopa 250/25 mg. Both baseline and peak-of-dose eye movements parameters on SDR were compared between patients who have and have not achieved LDR (LDR+ and LDR-) after 2- weeks of continuative levodopa therapy.

*Results:* Forty PD patients were enrolled [23 (57.5%) Men; age 64.5±6.9 years; disease duration 1.7±1.1 years; baseline UPDRS-ME 25.8±8.3; peak UPDRSM E 21.3±8.3]. Out of them, 20 (50%) were LDR+. Patients LDR+ had a significantly higher horizontal pursuit gain at SDR peak-of-dose than patients LDR-.

*Conclusions:* Horizontal pursuit gain at SDR peak-of-dose assessment may predict LDR achievement in de novo PD patients.