

**The effects of Levodopa Challenge Test on eye movements in Parkinson's disease: insights from a de novo cohort**

Claudio Terravecchia<sup>1</sup>, G. Mostile<sup>1,2</sup>, C.G. Chisari<sup>1</sup>, A. Luca<sup>1</sup>, R. Terranova<sup>1</sup>, G. Donzuso<sup>1</sup>, C. Rascunà<sup>1</sup>, C.E. Cicero<sup>1</sup>, G. Sciacca<sup>1</sup>, A. Nicoletti<sup>1</sup>, M. Zappia<sup>1</sup>

<sup>1</sup>Department of Medical and Surgical Sciences and Advanced Technologies "G.F. Ingrassia", University of Catania, Catania, Italy

<sup>2</sup>Oasi Research Institute-IRCCS, Troina, Italy

*Introduction:* Clinical eye movement quantitative assessment represents a promising non-invasive tool to investigate both pathophysiology and clinical aspects of neurodegenerative disorders. In Parkinson's disease (PD), eye movements abnormalities involving both saccadic and smooth pursuit movements were described and investigations about the effects of antiparkinsonian drugs on eye motility provided conflicting evidences. Notably, only few studies with small sample sizes assessed Levodopa (LD) effects on a drug-naïve population through a standardized Levodopa Challenge Test (LCT). Moreover, few data are available about vertical eye movements after LD administration.

*Objective:* We aimed to widely investigate eye motility effects of LCT in a large de novo PD population.

*Methods:* Patients fulfilling UK-Brain-Bank criteria for PD were enrolled. Eye movement were recorded by Eyelink 1000 Plus. Horizontal and vertical visually guided saccades, horizontal and vertical smooth pursuit movements (SPM) were assessed at baseline and after 2 hours from the administration of Levodopa/Carbidopa 250/25 mg.

*Results:* Forty de novo PD patients were enrolled [23 Men (57.5%); mean age 64.5±6.9 years; mean disease duration 1.7±1.1 years; baseline UPDRS-ME 25.8±8.3; peak UPDRS-ME 21.3±8.3]. We found an improvement in saccadic velocities and accuracy as well as reduced horizontal latencies after LD administration. Moreover, an increased vertical SPM gain was demonstrated.

*Conclusions:* Our findings from a de novo population partially confirmed literature evidences, enlightening interesting insights about acute LD effects on SPM and saccadic latencies.