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Effects of altered neuropsychiatric symptoms on the gait initiation in subjects with Parkinson's Disease

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Introduction: In People with Parkinson's Disease (PwPD), impairments of Anticipatory Postural Adjustments (APA) may be related to difficulties with initiating stepping. The role of psycho-emotional and neuropsychiatric symptoms on postural control and walking is well established [1]. However, no influence of emotional visual stimuli emerged on the Center Of Pressure (COP) displacements [2].

Objective: To investigate the association between APA and the emotional disturbances during gait initiation in PwPD.

Methods: Twenty-two subjects with PD (H&Y 2-3) stood on a dynamometric platform and were asked to initiate gait in response to neutral, pleasant and unpleasant auditory stimuli. The experiment took place during the "on" state. The COP displacements during the imbalance and unloading phases were calculated from the ground reaction force data [3]. The alexithymia, anxiety and impulsiveness were respectively assessed through the Toronto Alexithymia Scale (TAS-20), the State-Trait Anxiety Inventory-Y Form (STAI-Y, TRAIT Dimension) and the Questionnaire for Impulsive-Compulsive Disorders in Parkinson's disease (QUIP-RS-IT). Correlation analysis was performed between the APA parameters and the clinical scales using the Spearman test.

Results: In the sagittal plane, during the imbalance phase, the COP displacement showed moderate correlations both with the STAI (rho=0.53, p=0.01) and the TAS-20 (rho=0.50, p=0.02) after the listening to the unpleasant stimuli. These associations indicate that PwPD with more severe emotional disturbances showed greater reductions of the backward movement of the COP.

Conclusions: Our results showed a significant impact of the psycho-emotional alterations on the preparatory stages of the step itself, as already hypothesized [4,5,6]. In particular, an altered understanding and regulation of emotions and increased anxious traits seem to have negative effects on the gait initiation. Consequently, it appears useful and important an early and careful assessment of all neuropsychiatric symptoms.

References:

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