Gait pattern in single and in dual-task in patients affected by Parkinson disease with and without camptocormia

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Introduction: Camptocormia (CC) is a postural deformity in Parkinson disease (PD), defined as "involuntary, non-fixed, pathological forward flexion of the trunk in standing position and walking, reversible when the patient is lying" [1]. Upper CC refers to the angulation of the different vertebrae along the spine, whereas Lower CC relates to the hip-angle [2]. Previous studies on small samples suggested that gait in PD patients with CC is characterized by reduced step and stride lenght [3].

Objectives: To asses gait pattern in single and in dual-task in PD patients with and without CC.

Methods: Patients were classified as Camptocormic (CC+) or not (CC-) based on the angle of Upper CC measured with "CamptoApp" [2] in according to a cut off of 40°. Clinical and demographical parameters were analyzed. All subjects performed gait analysis through an optoelectronic system of BTS by using Davis Protocol in single-task (GAIT) and in motor and cognitive dual-task (MOT, COG). Finally, a t-test for independent samples was performed through SPSS statistics in order to compare demographic, clinical and gait spatiotemporal parameters between CC+ and CC-.

Results: Forty PD patients were classified as CC+, whereas 40 as CC-. CC+ had a mean age of 64.8 ± 9.1 years, while CC- had a mean age of 64.0 ± 1.0 years. Among clinical parameters, MDS-UPDRS total score was higher, as a trend, in patients CC+ vs CC-. Regarding gait parameters, the mean lenght cycle resulted statistically significant higher in CC+ as compared to CC- both in MOT and COG tasks.

Conclusions: CC in PD is associated with increased gait instability, especially in dual-task condition, with consequent risk of falling. Early identification of CC should lead to employ integrated rehabilitation strategy aimed at improving dynamic balance especially in dual-task condition, thus reducing the risk of falling.

References:
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