

Neuropsychological analysis of gait disturbances during dual task in MCI patients

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Introduction : dual task difficulties are frequently reported in MCI patients, but are not easily objectivated in classical neuropsychological tests.

Methods and Materials : 14 elderly normal controls and 14 MCI patients participated in the preliminary study. Patients were first diagnosed MCI according to Petersen criteria (1999). All participants realized both neuropsychological and gait testing. Neuropsychological testing consisted of global cognitive assessment (MMSE and Mattis scales), verbal episodic memory test (Grober & Buschke test), visuoperceptive test (Copy of Complex Rey Figure), alerte and divided attention tests and IADL assessment. Different gait parameters were recorded using a new sensitive instrument (“Locometrix”), during simple and dual task (counting down). Gait parameters which differentiated both groups in dual task were entered into correlational analysis with the neuropsychological performances in MCI patients.

Results : the following gait parameters differentiated both groups in dual task : speed of walk, stride frequency and symmetry. Interestingly, correlational analyses showed that speed of walk was positively correlated to the MMSE score and that the alteration of symmetry due to dual task was correlated to the higher reaction time in the divided attention test.

Conclusion : this study demonstrates that “walking and talking” situation is already impaired in MCI patients. By affecting specific gait parameters, it could reflect reduced attentional resources in MCI population. From a more theoretical point of view, this observation could be discussed in terms of global cognitive functioning and of automatic versus effortful processes required to walk “normally”.