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Title: Is there an interest to determine the gait's profile of MCI subjects to predict the risk of Alzheimer disease?

Abstract:

Introduction: Mild cognitive impairment subjects (MCI) have a risk to develop Alzheimer disease (AD), but actually, there are no predictive parameters clearly identified. Furthermore, MCI have early gait's alterations. Locometrix° (a triaxial accelerometric device) is an instrumental approach to assess gait's parameters.

The purpose of this preliminary study is to compare the efficiency of Locometrix to find out parameters which can distinguish MCI who have a greater risk to develop AD.

Materials and methods: In 2007, 11 MCI subjects (according to Petersen criteria) had to walk 40 meters with accelerometric device (Locometrix°). These procedures were realized in simple (ST) and dual task (counting down, DT). The same assessment was proposed in 2008.

Results: In 2008, out of the 11 MCI of 2007, the neuropsychological evaluation characterised 1 normal subject (NS), 5 MCI and 5 AD. Concerning Locometrix in 2008, 2 parameters show a difference ($p < 0.05$) between MCI who stand MCI (MCI=) and MCI who become AD (MCI+). First, when delta DT-TS is studied, MCI= present a decrease of length stride and MCI+ present an increase of this length. Furthermore, delta DT-TS present a decrease of symmetry more important ($p < 0.05$) by MCI+ than by MCI=. No other parameters permit to distinguish the 2 groups of MCI.

Conclusion: After one year's follow-up, a correlation is found between the parameters measured by Locometrix and the cognitive decline of the MCI subjects. Delta DT-ST stride length and symmetry show a significant difference between MCI= and MCI+. However these findings should be validated in a more important population.