The Montreal Cognitive Assessment is superior to the Mini–Mental State Examination in detecting patients at higher risk of dementia

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ABSTRACT

Background: To examine the discriminant validity of the Montreal Cognitive Assessment (MoCA) and the Mini-Mental State Examination (MMSE) in detecting patients with cognitive impairment at higher risk for dementia at a memory clinic setting.

Methods: Memory clinic patients were administered the MoCA, MMSE, and a comprehensive formal neuropsychological battery. Mild cognitive impairment (MCI) subtypes were dichotomized into two groups: single domain–MCI (sd–MCI) and multiple domain–MCI (md–MCI). Area under the receiver operating characteristic curve (ROC) analysis was used to compare the discriminatory ability of the MoCA and the MMSE.

Results: Two hundred thirty patients were recruited, of which 136 (59.1%) were diagnosed with dementia, 61 (26.5%) with MCI, and 33 (14.3%) with no cognitive impairment (NCI). The majority of MCI patients had md–MCI (n = 36, 59%). The MoCA had significantly larger AUCs than the MMSE in discriminating md–MCI from the lower risk group for incident dementia (NCI and sd–MCI) [MoCA 0.92 (95% CI, 0.86–0.98) vs. MMSE 0.84 (95% CI, 0.75–0.92), p = 0.02]. At their optimal cut-off points, the MoCA (19/20) remained superior to the MMSE (23/24) in detecting md–MCI [sensitivity: 0.83 vs. 0.72; specificity: 0.86 vs. 0.83; PPV: 0.79 vs. 0.72; NPV: 0.89 vs. 0.83; correctly classified: 85.1% vs. 78.7%].

Conclusion: The MoCA is superior to the MMSE in the detection of patients with cognitive impairment at higher risk for incident dementia at a memory clinic setting.

Key words: mild cognitive impairment, memory clinics, screening

Introduction

The concept of Mild Cognitive Impairment (MCI), a transitional state between normal aging and early dementia, has evolved from a focus on the increased risk of incident dementia of undifferentiated MCI (Petersen et al., 1999) to the development of MCI amnestic subtypes (Petersen et al., 1999), of which multiple domain–MCI (md–MCI) is the most prevalent cognitive phenotype (63.5%) in memory clinics (Rasquin et al., 2005). Patients with md–MCI have a higher conversion rate to either Alzheimer’s disease (AD) (Forlenza et al., 2009) or vascular dementia (VaD) (Rasquin et al., 2005). Overall, md-MCI was reported recently to have a 11.9% conversion rate as compared to 2.1% for sd-MCI and 0.3% for No Cognitive Impairment (NCI) (Ganguli et al., 2011). Furthermore, patients with sd-MCI more frequently resume normal cognitive function (21%–53.4%) than md-MCI (6.3%–16.4%) (Forlenza et al., 2009; Ganguli et al., 2011). Hence, it is important to establish sensitive cognitive screening tools to detect md–MCI in patients so as to facilitate early intervention and focused clinical management.