Cognitive profiles of vascular and neurodegenerative MCI

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ABSTRACT

The objective of the thesis was to investigate the cognitive profiles of different types of mild cognitive impairment (MCI) and follow their course over time. Would it be possible to differentiate between "benign" and "malign" forms of MCI, and identify different dementia disorders in their prodromal stages by means of cognitive profiles? In study I consecutive MCI subjects (N=112) were assessed with a neuropsyhological test battery of 21 tests. When compared to healthy controls (N=35) MCI subjects had impairments in all cognitive domains (speed/attention, memory and learning, visuospatial functions, language and executive functions), which contradicted the prevailing view of MCI typically being memory impairment, "amnestic MCI". In study II the subjects were grouped by cerebrovascular disease. Subjects with significant vascular disease (N=60) performed overall worse on the neuropsychological test battery than those without vascular disease (N=60). The most clear-cut differences were seen on speed/attention and executive tests, and the conclusion was that there were similarities in the cognitive profiles of MCI with vascular disease and vascular dementia. In study III MCI subjects without vascular disease were grouped by concentrations of the Alzheimer-typical biomarkers total-tau (T-tau) and beta-amyloid (Aß). Subjects with Alzheimer-typical concentrations of one or the other or both biomakers in cerebrospinal fluid (N=73) performed worse on episodic memory and speed/attention tests than those with normal concentrations (N=73). When subjects were grouped into those with only high T-tau, only low Aß and both high T-tau and low Aß, those with both high T-tau and low Aß tended to perform slightly worse, while the other two groups performed quite similarly.

In study IV 175 subjects were followed up after two years. Forty-four converted to dementia, all with impairment in several cognitive domains at baseline, and all but two had either vascular disease or Alzheimer-typical biomarkers. Single domain MCI – regardless of vascular disease and biomarkers – had a benign prognosis over two years. The combination of multiple domain amnestic MCI and vascular disease was the best predictor of mixed and vascular dementia, while multiple domain amnestic MCI and biomarkers was the strongest predictor of Alzheimer's disease.

MCI is a heterogeneous condition – the original purely amnestic MCI was very rare – w ith several aetiologies. The combination of cognitive profiles and aetiologies has the potential of making a crucial contribution in diagnosing dementia disorders at their earliest manifestations.

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II Cognitive profiles of mild cognitive impairment with and without vascular disease. *Neuropsychology.* 2007 Nov;21(6):706-12.

III Episodic memory and speed/attention deficits are associated with Alzheimer-typical CSF abnormalities in MCI. In press *J International Neuropsychological Soc*

IV Two year outcome of MCI subtypes and aetiologies in the Goteborg MCI study. Manuscript

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