Validation of the Total Cerebrovascular Disease Burden Scale in a Community Sample

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Abstract

\textbf{Background:} A total cerebrovascular disease (CeVD) burden scale was previously constructed and an inverse association of CeVD burden and cognition was found. However, the generalizability of the CeVD scale has not been examined.

\textbf{Objective:} The objective was to validate the previously constructed total CeVD burden scale by establishing its association with cognitive function and dementia diagnosis in a community sample.

\textbf{Methods:} Eligible participants were assessed on an extensive neuropsychological battery and underwent MRI scans. The total CeVD scale, comprising markers of both small- and large-vessel diseases, was derived according to previously described criteria. Association of total CeVD burden with global and domain-based cognitive performance and dementia diagnostic utility of the scale was established.

\textbf{Results:} A total of 863 participants were included in the analysis. A stepwise association of CeVD burden score with global and domain-specific cognitive function was found. Per score increase on the total CeVD burden scale was associated with 3.6 (95\% CI = 2.1–6.4) times higher odds of dementia compared to dementia-free.

\textbf{Discussion:} The total CeVD burden scale is associated with cognition and dementia in a community sample. Longitudinal studies are required to establish the predictive ability of this scale.

Keywords: Cerebrovascular disease, cognition, dementia, diagnosis, vascular burden

INTRODUCTION

The concept of a cerebrovascular disease (CeVD) scale has been proposed as an efficient measure to assess global CeVD burden through multimodal neuroimaging approaches [1, 2], in order to investigate associations between CeVD and outcomes of clinical importance, such as cognitive dysfunction and poor