CEREBROSPINAL FLUID BIOMARKERS IN RELATION TO PROGRESSION OF WHITE MATTER LESIONS OVER THREE YEARS - LONGITUDINAL RESULTS FROM THE LADIS STUDY

M. Jonsson, H. Zetterberg, S. Rolstad, M. Bjerke, A. Wallin

Dpt of Psychiatry and Neurochemistry, Inst of Neuroscience and Physiology, University of Gothenburg, Molndal, Sweden

Background: White matter lesions (WMLs) caused by small vessel disease is a common and often progressive condition in elderly people and contribute to cognitive and functional impairment. There are no established biochemical markers for progression of WMLs.

Aim: To study the relation between progression of WMLs rated on magnetic resonance imaging (MRI) of the brain and cerebrospinal fluid (CSF) levels of structural biomarkers associated with Alzheimer's disease (AD) and subcortical vascular dementia. Are there biochemical markers in CSF predicting progression of WMLs by reflecting the ongoing pathophysiological process?

Methods: Fifty-three non-demented elderly individuals with WMLs were subjected to lumbar puncture. CSF samples were analyzed for the 1-40 and 1-42 amino acid fragments of amyloid-β, α- and β-cleaved soluble amyloid precursor proteins, total tau, hyperphosphorylated tau, neurofilament light protein, sulfatide and CSF/Serum-albumin ratio. After three years, 37 patients were eligible for a follow-up MRI. Progression of WMLs was rated using the Rotterdam progression scale (RPS) in which progression is ranged from 0 (no progression) to 9 (severe progression). Stepwise linear regression was performed to assess which neurochemical variables predicted WML progression.

Results: Sulfatide was the only variable that predicted progression ($p = .015$). Patients with more pronounced WML progression (RPS >2; N=15) had lower mean sulfatide concentration, as compared to patients with no or minimal progression (RPS 0-2; N=22). There were no significant differences with regard to group characteristics.

Conclusions: Progression of WMLs was predicted by a lower level of sulfatide in CSF but not by biomarkers associated with AD.