Background: The need to find biomarkers for the earliest stages of Alzheimer’s disease (AD) and Mild Cognitive Impairment (MCI), where clinical manifestations are limited, has been widely recognized. Early diagnosis allows for prompt access to medical attention, symptomatic medications and future disease-modifying treatments. The aim of this study was to discover potential protein or peptide biomarkers in the cerebrospinal fluid (CSF) that could differentiate between healthy aging and MCI or early AD.

Methods: CSF from 100 patients with AD (age range 50-87 years), 36 with amnestic MCI (age range 55-80) and 36 healthy controls (age range 51-87 years) originating from two memory clinics were analyzed on two chromatographic surfaces with surface-enhanced laser desorption/ionization time-of-flight mass spectrometry (SELDI-TOF).

Results: We found a panel of 13 peptides and proteins that could differentiate between healthy controls, patients with MCI and patients with AD. Among the discovered proteins we found ubiquitin, transthyretin and a fragment of the complement protein C3a.

Conclusions: Proteomic profiling of cerebrospinal fluid provided a novel panel of 13 potential biomarkers for prediction of MCI progression to AD. The identified biomarkers seem to be relevant to the pathogenesis of AD and could help gain an understanding of the molecular pathways in which they may function.