Proteomics-based CSF biomarkers in familial frontotemporal dementia

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Background: Biomarkers reflecting disease pathology and progression of neurodegenerative disorders are of great need. A triplet of biomarkers has been established for Alzheimer's disease (AD) but no clear biomarker profile exists for other types of dementia e.g. frontotemporal dementia. The aim of this explorative study was to assess the proteome using unbiased proteomics of CSF from patients with inherited frontotemporal dementia linked to chromosome 3 (FTD3) caused by autosomal dominant mutation in CHMP2B. **Methods:** CSF samples were obtained by lumbar puncture and collected in polypropylene tubes. The sample groups contained four patients with familial FTD3, four patients diagnosed with sporadic FTD and four healthy control individuals. Patients and control individuals were age and gender-matched to the extent possible. The CSF samples were analyzed on a weak cation exchange chromatographic surface in a SELDI-TOF (surface-enhanced laser desorption/ionization time-of-flight) mass spectrometer. **Results:** A panel of six proteins were significantly changed between at least two groups. Graphs from the statistical analysis showed a tendency of similar biomarker profiles for patients with FTD (both familial and sporadic) when compared with control individuals (as example see figure). Two of the markers were recognized as albumin and transthyretin. **Conclusions:** This is the first explorative study investigating changes in CSF biomarker profiles between familial FTD, sporadic FTD and healthy individuals using unbiased proteomics. This unbiased analysis may help in the understanding of the disease pathology as it reveals potential changes in a wide array of proteins within the CSF. The protein profiles between familial and sporadic FTD were similar suggesting that the two groups share disease pathology. These preliminary findings imply a common FTD fingerprint, potentially a common therapeutically drug could be used in treatment of both diseases in the future.