LIGHT CHAIN FERRITIN: A POTENTIAL NEW MARKER FOR THE DIFFERENTIAL DIAGNOSIS OF CBD AND PSP

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Introduction: Clinical and pathological evidence supports the notion that corticobasal degeneration (CBD) and progressive supranuclear palsy (PSP) are two distinct disorders. At the biochemical level, CBD and PSP show accumulation of aggregated tau proteins, but the profiles of Tau species are different.

Aim: To compare the proteome of CBD and PSP brains in order to find additional differences at the molecular level between these two diseases.

Methods: We performed a proteomic analysis of caudate nucleus of 7 PSP, 7 CBD, and 7 controls brains, matched for age, sex, postmortem delay, apolipoprotein E genotype and RNA integrity. The protein profiles of a soluble fraction of CBD and PSP brains were compared using 2-D difference gel electrophoresis (2-D DIGE). Quantitative 2-D DIGE analysis was performed using Redfin software. The proteins in the spots were identified by nano-flow liquid chromatography electrospray tandem mass spectrometry.

Results: Twenty spots were identified by 2-D DIGE using the following filters:

1) 1.5 fold difference or higher,
2) p value equal or lower than 0.05, and
3) presence in all the samples.

One protein identified by MS/MS was light chain (LC) ferritin. We confirmed this identification by WB analysis, and established that the levels of LC ferritin in CBD samples was 2-fold higher that in PSP samples. Immunohistochemical analysis further supported the WB results.

Conclusions: This study uncovered LC ferritin as a new biomarker that could help in the differential diagnosis of CBD and PSP. Further studies will determine whether LC ferritin plays a role in these disorders.