Lymphocyte Proliferation as a Means to Assess Cell Cycle Dysregulation in Alzheimer’s Disease: Clinical Performance of the LymPro Assay With 7-Year Longitudinal Diagnosis Refinement

Abstract

Cell Cycle Dysfunction (CCD) in lymphocytes has been recognized as a key pathology in Alzheimer’s disease (AD). Furthermore, it appears likely that this dysfunction is related to amyloid-β (Ab) with evidence of Ab triggering cell cycle re-entry and with progression, and cognitive decline as refined through the lens of time.

Methodology

Subjects Three original subject cohorts (CI, AD, VaD) were selected from 2007-2008 studies at Provista Life Sciences. The subjects were selected based on the use of the algorithms and an intact control group (CI) was generated in the studies performed at Provista Life Sciences. These three subject cohorts were used to generate two separate longitudinal cohorts, one a 7-year longitudinal cohort and another a 10-year longitudinal cohort. The two cohorts included the original 44 subjects, 36 of which had pathologically determined AD plus another diagnosis (Lewy Body or vascular dementia) they had pathologically determined AD plus another diagnosis (Lewy Body or vascular dementia).

Exclusion or a change in cohort. The chart review clarified 7 original cohort designations, resulting in excluding three and a change in cohort of 4, a change in 16% of the original cohort.

RESULTS

- Sensitivity: 0.81
- Specificity: 0.5
- PPV: 0.8
- NPV: 0.9
- Accuracy: 0.8

The chart review clarified 7 original cohort designations, resulting in excluding three and a change in cohort of 4, a change in 16% of the original cohort. There were 7 of 44 subjects (16%) had a diagnosis that upon chart review caused an exclusion from further analysis.

Conclusions: The 7-year and 10-year longitudinal cohorts were created to enhance the differentiation of AD from normal controls and other dementias. Both cohorts were created to support the clinical performance of the LymPro Assay to accurately diagnose AD.

FUTURE WORK

- Developing a refined algorithm to better differentiate AD from other dementias.
- Further explore the enhanced assay stimulation parameters.
- Analytical performance:
- Pharmacological clinical trials will be completed in the second half of 2014.
- Compilation of clinical and diagnostic data will be compiled in a chart review of all available data.
- Key References:

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In AD, terminally differentiated neurons aberrantly re-enter the cell cycle progressing through the lens of time.

Change in cohort of the listed subjects plus their reasons for change.

Patient inclusion rules:

- The CDKs may be involved in phosphorylation of tau. Some authors have related CCD to amyloid-β (Ab) with evidence of Ab triggering cell cycle re-entry and with progression, and cognitive decline as refined through the lens of time.

Excluded from analysis

Non-optimized MULTIVARIATE DATA

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