A comparison of traditional neuropsychological tests and automated cognitive tests in assessing cognitive decline in the elderly

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2011 Diagnostic guidelines for preclinical Alzheimer’s Disease

Trials in preclinical AD will involve repeated cognitive testing of middle aged and elderly individuals with generally normal cognitive function.

Spirling et al. recognised the need for sensitive tests – do we need new ones or do we already have suitable tests?

Practice effects in long-term trials using traditional neuropsychological tests in non-demented elderly individuals were identified decades ago – these effects were seen up to 3 years.

METHODS

Data from the Alzheimer's Disease Initiative (ADNI)

- ALS: Alzheimer’s Disease Neuromaging Database
- ADNI: Alzheimer’s Disease Neuroimaging Initiative
- Database
- ADNI Data
- CDR System Data
- ADNI Controls
- CDR System Data
- Alzheimer’s Disease

RESULTS

- LSmeans with 95% Confidence Intervals
- Over the 5 years, only delayed recall on the AVLT showed a significant deficit at any time point (5 yrs).
- The effect sizes of these improvements ranged from 0.25 to 0.72, 3 being small to medium effect sizes.
- The deficits were detected using computerised tests of attention, information processing, working and episodic memory.

DISCUSSION

- The analyses presented here indicate that traditional neuropsychological tests are unlikely to prove suitable outcome measures in such trials.

CONCLUSIONS

- The ADNI tests are excellent for cross-sectional comparators as is illustrated by the ability in the study to distinguish the controls, Mild Cognitive Impairment (MCI) and Alzheimer’s disease (AD) patients from each other, but are not suitable for not repeated administration in the elderly controls or MCI.