Journal of the International AIDS Society

Poster presentation

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Do cerebral function test results correlate when measured by a computerised battery test and a memory questionnaire in HIV-1 infected subjects?

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from Ninth International Congress on Drug Therapy in HIV Infection
Glasgow, UK. 9–13 November 2008

Published: 10 November 2008

Journal of the International AIDS Society 2008, **11**(Suppl 1):P301 doi:10.1186/1758-2652-11-S1-P301

This abstract is available from: http://www.jiasociety.org/content/11/S1/P301

Purpose of the study

In the post-HAART era, the incidence of minor cognitive and motor deficits (MCMD) in HIV-1 infected subjects has increased. A rapid and sensitive screening tool to identify individuals with HIV-associated neurocognitive impairment (NCI) is needed to determine how best to prevent and treat these conditions. This study aimed to determine whether the Prospective & Retrospective Memory Questionnaire (PRMQ) could be a useful screening tool for HIV-associated NCI, by comparing with indices of a brief computerised battery test.

Methods

The PRMQ and a computerised battery test with a high positive predictive value for detecting HIV-associated NCI (CogState™) were administered to HIV-positive patients stable on HAART. Selection inclusion criteria included plasma HIV-RNA level <50 copies/mL for a minimum of 3 months. Cerebral impairment was defined as either memory impairment (MI, a Z score of more than two SD from the sample mean for PRMQ) or NCI, a Z-score of more than two SD in more than two tasks on the computerised battery test. SPSS software was used for analysis.

Summary of results

Forty-five patients were recruited between March and April 2008; 80% were male. Mean age was 48 years (SD 11.2) and mean CD4 count was 546 cells/uL (range 70–1,350). 31% and 69% were taking NNRTI and PI-based HAART, respectively. Seven subjects were identified with cerebral impairment; NCI in five (11.1%) and MI in two (4.4%). No subjects had both MI and NCI as defined by study tests. PRMQ scores were compared to population data (n = 551) and MI was also identified in the same two subjects. No statistically significant correlations were observed between total PRMQ score and global (average) computer score ($p > 0.05$) or between type of ARV therapy (NNRTI vs. PI) and either total score ($p => 0.05$). However, on analysis of specific domains, the PRMQ 'short term memory' section significantly correlated with both overall global score ($r = -0.31$, $p < 0.05$) and "memory & learning" domain of the computerised battery ($r = -0.36$, $p < 0.05$).

Conclusion

The PRMQ is not a good screening tool for NCI in HIV-1 infected subjects. However, the PRMQ did demonstrate correlation between identification of memory and learning deficits, when compared to the computerised battery test, and identified individuals with MI at similar rates to population data. We may thus be observing two distinct processes; HIV-related NCI and early stages of cortical memory loss with both tools having different utilities in future clinical practice.