Cognitive trajectories over 4 years among HIV-infected women with optimal viral suppression

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Background

- Estimated 50% of HIV+ individuals will exhibit cognitive impairment during their lifetime despite benefits of combination antiretroviral therapy (cART)†
- Although lower rates of impairment are seen among HIV+ individuals on cART, impairment persists, even among this subgroup with suppressed plasma HIV RNA (cART VS)2-4
- Further research is needed on cognitive trajectories among cART VS individuals to provide a framework for understanding mechanisms of detrimental change

Objectives

Aim: To examine longitudinal changes over 4 years in a large sample of cART VS women

Hypothesis 1a: Consistent with our cross-sectional work2, HIV+ women would perform worse than HIV- women on learning, memory, and attention

Hypothesis 1b: cART VS women would perform worse than HIV-women but better than HIV+ women without systematic viral control (NVS) on global Neuropsychological (NP) test performance, learning, memory, and attention

Methods

- Longitudinal WIHS data through Sept 2015 were extracted in April 2016. https://statepi.jhsph.edu/wihs/wordpress/
- Exposure Variable:
  - cART use: categorized as cART, sub-cART, or no ART
  - Plasma HIV RNA: undetectable (<48 c/ml) or detectable
  - NP test battery: began 2009 & administered biennially
- Analyses: Mixed-effects regressions were used to examine group differences on NP performance controlling for relevant covariates

Participants

Baseline sample characteristics cART VS (n=239) NVS (n=392) HIV- (n=301)

Demographics
  - Age (years), M (SD)*** 47 (8) 46 (9) 43 (10)
  - Years of education, M (SD) 12 (3) 12 (3) 12 (3)

Cognitive tests
  - WRAT-3 reading subtest, M (SD) 93 (17) 91 (18) 90 (18)
  - Years of education, M (SD) 12 (3) 12 (3) 12 (3)

HIV clinical predictors of cognitive performance

- AIDS diagnosis associated with 0.5-1.6 lower T-score on memory, attention, executive function, & global NP score (p=0.005)
- Lowest CD4 count negatively associated with attention (p=0.005)
- Efavirenz use associated with 1.3-1.4 lower T score on fluency & attention (p=0.005)
- Every 10% increase in the proportion of virally suppressed WHS visits associated with 0.3-0.4 point higher T-score on memory, learning, executive function, speed, & global NP score (p=0.005)

Conclusions

- Longitudinal findings confirm persistent cognitive impairment despite continued viral suppression
- Patterns of group differences indicates persistent vulnerability in attention, learning, memory, & fluency & increased vulnerability in motor skills over time despite optimal suppression among HIV+ women
- Longer-term studies are needed to confirm the pattern of findings and investigate the underlying neurobiological mechanisms


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