

Cross-Sectional and Cumulative Longitudinal Central Nervous System Penetration Effectiveness Scores Are Not Associated With Neurocognitive Impairment in a Well Treated Aging Human Immunodeficiency Virus-Positive Population in Switzerland

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Background

Neurocognitive impairment (NCI) in people with human immunodeficiency virus (PWH) remains a concern despite potent antiretroviral therapy (ART). Higher central nervous system (CNS) penetration effectiveness (CPE) scores have been associated with better CNS human immunodeficiency virus (HIV) replication control, but the association between CPE and NCI remains controversial.

Methods

The Neurocognitive Assessment in the Metabolic and Aging Cohort (NAMACO) study is a subgroup of the Swiss HIV Cohort Study (SHCS) that invited patients aged ≥ 45 years enrolled in the SHCS and followed-up at NAMACO-affiliated centers in Switzerland to participate between May 2013 and November 2016. In total, 981 patients were enrolled, all of whom underwent standardized neurocognitive assessment. Neurocognitive impairment, if present, was characterized using Frascati criteria. The CPE scores of NAMACO study participants with undetectable plasma HIV-ribonucleic acid at enrollment (909 patients) were analyzed. Cross-sectional CPE scores (at neurocognitive assessment) were examined as potential predictors of NCI in multivariate logistic regression models. The analysis was then repeated taking CPE as a cumulative score (summarizing CPE scores from ART initiation to the time of neurocognitive assessment).

Results

Most patients were male (80%) and Caucasian (92%). Neurocognitive impairment was present in 40%: 27% with HIV-associated NCI (mostly

asymptomatic neurocognitive impairment), and 13% with NCI related to other factors. None of the CPE scores, neither cross-sectional nor cumulative, was statistically significantly associated with NCI.

Conclusions

In this large cohort of aviremic PWH, we observed no association between NCI, whether HIV-associated or related to other factors, and CPE score, whether cross-sectional or cumulative.

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