364. Association of Maternal ARV Use with Microcephaly in HIV-Exposed Uninfected Children
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Background. Perinatal HIV transmission has dramatically decreased with combination antiretroviral (ARV) regimens, but complications among HIV-exposed uninfected (HEU) children, such as microcephaly, warrant ongoing surveillance.

Methods. We evaluated HEU children enrolled in the Surveillance Monitoring for ART Toxicities (SMARTT) study, a prospective cohort study conducted by the PHACS network at 22 US sites. Microcephaly was defined using 2000 CDC Growth Z-scores for head circumference (HC) measured at 6–36 months of age (< z-score −2) and using Nellhaus criteria, or using Nellhaus standards across all ages. Modified Poisson regression models were fit to obtain relative risks (RRs) for associations between in utero ARV exposure and microcephaly status, adjusted for potential confounders. Sensitivity analyses were conducted. Neurodevelopmental functioning was compared between HEU children with vs. without microcephaly.

Results. Among 3055 SMARTT participants enrolled as of April 2017 with a HC measurement over 5.1 years median follow-up (IQR = 3.0, 7.2), 159 (5.2%, 95% CI: 4.4–6.1%) had microcephaly identified by Nellhaus criteria and 70 (2.3%, 95% CI: 1.8–2.8%) by SMARTT criteria. In adjusted models, in utero exposure to efavirenz (4.7% exposed) was associated with increased risk of microcephaly by both Nellhaus standards (aRR=2.02, 95% CI: 1.16, 3.51) and SMARTT criteria (adjusted RR = 2.56, 95% CI: 1.22, 5.37). These associations were more pronounced among children exposed to combination regimens of efavirenz which included zidovudine+lamivudine than those exposed to tenofovir+emtricitabine (Figure 1). Associations of microcephaly with efavirenz exposure during pregnancy was associated with a higher risk of microcephaly in infancy and childhood. These findings may support identification of alternatives to efavirenz as part of first-line ARV therapy.

Conclusion. Efavirenz exposure during pregnancy was associated with a higher risk of microcephaly in infancy and childhood. These findings may support identification of alternatives to efavirenz as part of first-line ARV therapy.
Conclusion. HIV-associated dementia results in substantial morbidity and mortality despite potent antiretroviral therapy. Prospective neurocognitive assessment documents significant impairments in most individuals. HIV-associated dementia will require additional strategies to mitigate the profound impact on the quality of life and longevity.

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36.7. Use of a Brief Task-Based Method to Assess the Functional Consequences of Cognitive Impairment in HIV
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Background. In spite of viral suppression with antiretroviral therapy (ART), neurocognitive impairment (NCI) affects ~20% of those infected with HIV; most are asymptomatic or only mildly impaired based on instrumental activity of daily living (IADL) self-reported questionnaires. Previous studies have shown a strong association between depression, common among HIV+, and self-reported IADL impairment, potentially confounding evaluation of the functional impact of NCI. We studied a brief (15–20 minutes) task-based measure of function, the Texas Functional Living Scale (TFLS), in the context of HIV, NCI, and depression.

Methods. Baseline data were analyzed from parallel, longitudinal cohort studies of neurocognitive function among HIV+ and demographics matched HIV-subjects enrolled at NIH and DoD sites. Subjects recruited at NIH were on ART with viral suppression (VS) ≥1 year and nearly all in the DoD also had long-term VS. All participants underwent a standardized, comprehensive neurocognitive battery (7 domains), as well as the TFLS. Global deficit score (GDS) ≥0.5 defined neurocognitive impairment (NCI) and TFLS impairment was defined as T-score >1 standard deviation below mean (i.e., < 40).

Results. 420 subjects were evaluated with demographics in Table 1. Eighty-five subjects (20%) had NCI by GDS and 57 (13%) subjects had TFLS impairment. 17% had a Beck Depression Inventory II (BDI) score ≥21 indicating significant depressive symptoms. In univariate analysis of Table 1 variables, only HIV status was not statistically different between those with or without TFLS impairment, however after adjustment using multivariable logistic regression, only education level, race, and NCI were associated with TFLS impairment; depressive symptoms (BDI ≥21) were not associated with functional impairment measured by TFLS.

Conclusion. In parallel DoD and NIH cohorts of well-treated HIV+ and matched HIV- subjects, task-based functional impairment measured by TFLS was strongly associated with NCI, but not with depressive symptoms, suggesting the potential utility of this measure to better understand the functional consequences of HIV-associated neurocognitive disorders. While the association of TFLS with education was expected, that with race was not and requires further study.

Table 2: Logistic Regression Model for TFLS Impairment (T-score <40)

| Risk Factor | N (%) | Odds Ratio | 95% Wald Confidence Limits | P-value |
|-------------|-------|------------|---------------------------|---------|
| DoD (ref: NIH) | 223 (53.1) | 1.29 | 0.80–2.03 | 0.26 |
| HIV+ (ref: HIV-) | 320 (76.2) | 1.00 | 0.71–1.46 | 0.90 |
| Age, mean (sd dev) | 47.2 (10.6) | 1.04 | 0.99–1.09 | 0.11 |
| Female (ref: Male) | 90 (21.4) | 1.06 | 0.92–1.23 | 0.35 |
| Race (ref: White) | 188 (44.8) | 8.51 | 5.03–14.81 | <0.001 |
| Block | 20 (4.8) | 2.47 | 0.95–6.48 | 0.06 |
| Education (ref: < 12th gr) | | | | |
| 12th grade/GED | 111 (26.4) | 0.39 | 0.13–1.17 | 0.09 |
| Some college | 105 (25.0) | 0.13 | 0.04–0.43 | 0.001 |
| Bachelor's degree | 88 (20.1) | 0.06 | 0.03–0.73 | 0.01 |
| Higher degree | 79 (18.8) | 0.05 | 0.02–0.83 | 0.003 |
| Employed (ref: Not employed) | 290 (69.1) | 0.70 | 0.32–1.55 | 0.58 |
| GDS (≥0.5) | 85 (20.2) | 3.40 | 1.75–6.63 | <0.001 |
| BD ≥21 | 71 (16.9) | 1.03 | 0.88–1.38 | 0.30 |

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POSTER ABSTRACTS