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LONGITUDINAL CHANGES IN SUBCLINICAL VASCULAR DISEASE IN UGANDAN YOUTH WITH HIV

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BACKGROUND

Sub-Saharan Africa is facing new challenges in HIV care including management of non- communicable diseases and a growing younger generation. The risk of cardiovascular disease (CVD) and prospective investigations in children and youth living with perinatally acquired HIV (PHIV) in sub-Saharan Africa are lacking. We investigated the progression of subclinical vascular disease in children with PHIV and uninfected (HIV-).

METHODS

Study design: Longitudinal analysis of baseline and week 96 data from an observational cohort of PHIV and HIV- children cohort prospectively enrolled at the JCRC in Kampala, Uganda

Subjects:

Inclusion criteria:

- **HIV**+: children living with perinatally acquired HIV aged 10-18 years years, on stable ART for at least 6 months with HIV-1 RNA< 400 copies/mL.
- **HIV-**: HIV unexposed uninfected children age and gender matched.

Exclusion criteria:

- Acute infection (Malaria, tuberculosis, helminthiasis, pneumonia, meningitis), moderate or severe malnutrition, diarrhea, known diabetes or CVD

Vascular disease measures:

- Carotid intima media thickness (IMT)
- Pulse Wave velocity (PWV)

TABLE 1: BASELINE CHARACTERISTICS

	PHIV n=101	HIV- N=96	p
Age (years)	12.93	12.67	0.24
Female sex (%)	54 (53)	50 (52)	0.96
HIV Variables			
Viral load < 20 copies/mL (%)	84 (86%)		
CD4 nadir (cells/µL)	619.50		
CD4 cell count (cells/µL)	988		
ART Duration (years)	9.88		
Nucleotide Reverse Transcriptase Inhibitor (%)			
Abacavir	42 (47)		
Lamivudine	1 (1)		
Tenofovir	12 (14)		
Zidovudine	33 (37)		
Nevirapine (%)	18 (27)		
Efavirenz (%)	46 (44)		
Lopinavir/ritonavir (%)	27 (28)		

FIGURE 1: PWV AND IMT AT BASELINE AND WEEK 96

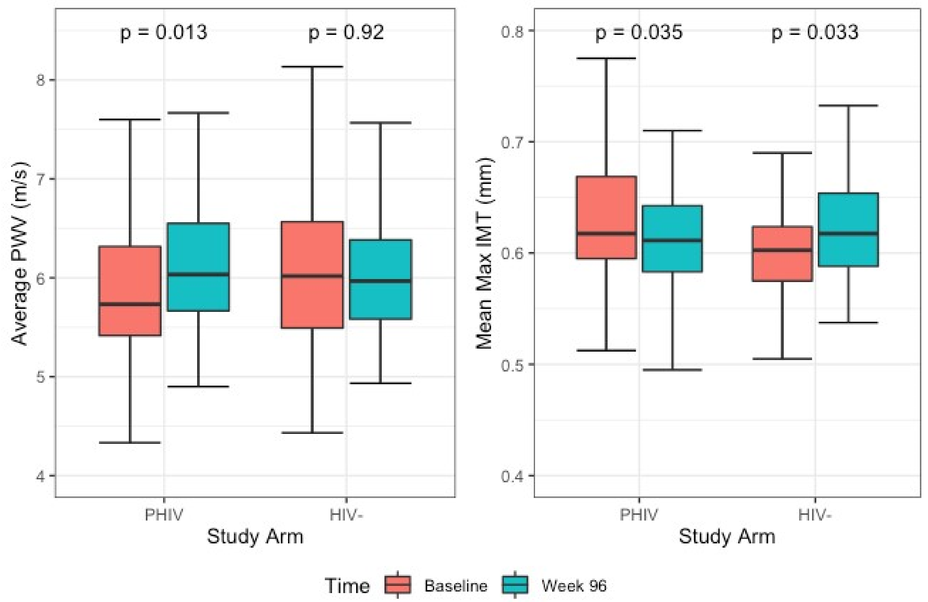

TABLE 2: REGRESSION ANALYSIS

	Estimate (95% CI)	P
Quantile Regression Max IMT PHIV at week 96		
Age at week 96 (years)	-0.007 (-0.017, 0.002)	0.11
Sex at week 96(male)	-0.02 (-0.044, 0.004)	0.094
BMI at week 96 (kg/m2)	-0.004 (-0.008, 0.000)	**0.026**
Tanner stage at week 96	0.030 (-0.001, 0.007)	0.123
CD8+T cells HLA+DR+ at baseline	0.003 (-0.001, 0.007)	0.185
Longitudinal analysis Max IMT PHIV		
Age at baseline (years)	0.155 (0.07, 0.239)	**<0.001**
Sex (male)	-0.001 (-0.033, 0.031)	0.931
BMI at baseline(kg/m2)	-0.005 (-0.012, 0.002)	0.172
Abacavir use	0.048 (0.014, 0.082)	**0.005**

RESULTS

- Table 1:
  - At baseline, 85% had viral load < 50 copies/mL and remained undetectable at week 96.
  - At baseline 72% were on an NNRTI based regimen, 53% of participants had a regimen switch between visits, 85% of whom switched to 3TC, TDF and DTG.
  - PHIVs had higher monocyte and T-cell activation; higher sCD14 (p=0.01) and elevated frequencies of non-classical monocytes (p<0.001)
- Figure 1:
  - At baseline, median IMT was slightly thicker in PHIVs compared to controls (p<0.01), while PWV did not differ between groups (p=0.08).
  - At week 96, PWV increased in PHIV (by 0.3 m/s, p=0.01) but did not significantly change in HIV- (p=0.92);
  - IMT decreased in PHIV (p=0.03) and increased in HIV- (p=0.03;, Figure).
  - PWV and IMT were not different between the groups at 96 weeks (p≥0.37).
- In univariate analyses, CD8+ activated T cells at baseline (r=0.25, p=0.02) correlated with IMT in PHIV,
- Table 2:
  - In quantile regression, after adjusting for demographic variables only BMI remained associated with IMT (p=0.03).
  - In longitudinal analyses in PHIV, after adjusting for age, sex, BMI, and CD4 nadir, abacavir use was associated with greater IMT (β=0.71, 95%CI 0.041,0.082, p=0.05).

CONCLUSION

- We show for the first time that in African PHIV viral suppression may prevent progression.
- Larger BMI and prolonged use of abacavir may increase subclinical vascular disease risk.
- Longitudinal follow-up of this cohort is required to understand downstream clinical implications of our findings.

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