BODY COMPOSITION IN INFANTS WITH HIV EXPOSURE UNINFECTED FROM THE ORCHID STUDY IN SOUTH AFRICA

#829

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BACKGROUND

Metabolic perturbations have been observed in infants with perinatal HIV and antiretroviral exposure who are uninfected (HEU). Data is sparse on body composition among HEU infants across the first 12 months of age.

- *In utero* exposures such as HIV, gestational diabetes, maternal obesity, and certain medications can influence fetal metabolic programming.
- Objective: To assess body composition and growth in uninfected HIV-exposed and unexposed infants during the first year of life.

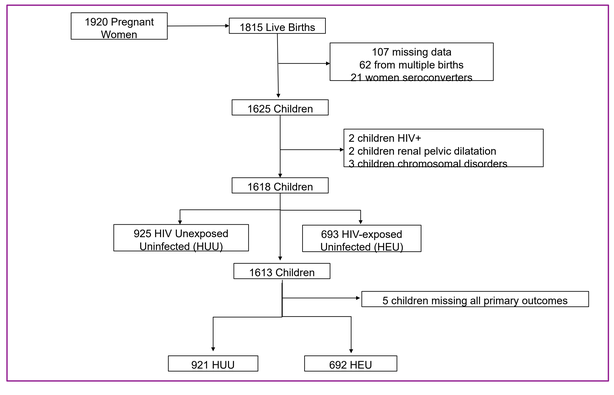
METHODS

The ORCHID Study (Obesogenic oRigins of maternal and Child metabolic health Involving Dolutegravir) is a prospective birth cohort study taking place in Cape Town, South Africa (NCT 04991402) which enrolled pregnant women with and without HIV infection <=18 weeks gestational age. All women with HIV received TLD.

- Study population: Pregnant women >16 yrs and their infants
- Outcomes: Infant anthropometry (weight, length, sum of triceps, subscapular, flank skinfolds) and fat mass and bodyfat% measured by air displacement plethysmography (PEAPOD).
- Exposures of interest: HIV, Dolutegravir
- Statistical analysis: mixed models fit to assess the association of HEU status with growth outcomes over time.

RESULTS

Figure 1. Flow Diagram



We thank the ORCHID study participants and study staff without whom this study would not be possible. This study was funded by NICHD R01HD104599.

Infants with perinatal HIV/ARV exposure and uninfected (HEU) had overall similar growth and body composition changes in the first year of life compared to infants without HIV/ARV exposure (HUU), which is reassuring. Maternal CD4 and VL were not associated with infant adiposity among HEU infants.

Table 1. Characteristics of participants at enrollment

Characteristics	HIV-unexposed children (HUU) n=921	HIV-exposed children (HEU) n=692
Maternal		
Age (years)	26.3 (22.8-30.8)	30.0 (25.5-34.5)
Socioeconomic Status		
Lowest	266 (29.7%)	264 (39.6%)
Middle	290 (32.4%)	224 (33.6%)
Highest	339 (37.9%)	178 (26.7%)
Gestational Age at Enrollment (weeks)	13.0 (10.0-16.0)	14.0 (10.0-16.0)
Gestational Diabetes	81 (8.8%)	53 (7.7%)
Primigravida	381 (41.4%)	145 (21.0%)
BMI (kg/m^2) at enrollment	29.7 (25.2-35.1)	29.0 (24.4-34.0)
Underweight <18.5 kg/m^2	10 (1.1%)	8 (1.2%)
Normal 18-24.9 kg/m^2	202 (21.9%)	182 (26.3%)
Overweight 25-29.9 kg/m^2	256 (27.8%)	185 (26.7%)
Obese >30 kg/m^2	453 (49.2%)	317 (45.8%)
Body fat (%)	41.7 (34.7-47.6)	41.2 (34.6-46.8)
Rate Gestational Weight Gain (kg/wk)	0.3 (02.-0.5)	0.2 (01.-0.4)
Cigarette Smoking	63 (6.8%)	67 (9.7%)
HIV Specific		
CD4 (cells/mm3)		
<200	N/A	45 (6.7%)
200-500	N/A	267 (40.0%)
>500	N/A	356 (53.3%)
HIV RNA level (copies/mL)		
<50	N/A	528 (76.4%)
50-1000	N/A	115 (16.6%)
>1000	N/A	48 (6.9%)
Female Sex	344 (49.5%)	291 (52.4%)
Gestational age at birth (wks)	39 (39 - 40)	38 (38 - 40)
Duration breastfeeding (wks)	35 (10 - 52)	11 (4 - 39)

All continuous variables expressed as median (interquartile range) and categorical variables as n (%)

Figure 2. Infant Growth and Body Composition from Age 0-12 months

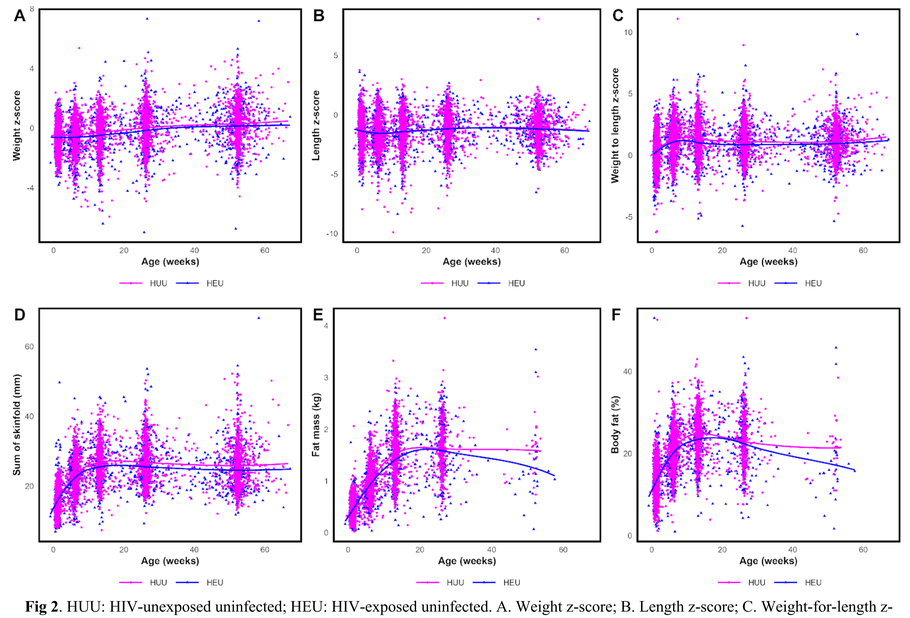


Fig 2. HUU: HIV-unexposed uninfected; HEU: HIV-exposed uninfected. A. Weight z-score; B. Length z-score; C. Weight-for-length z-score; D. Sum of Skinfolds (mm); E. Fat mass (kg); F. Body fat percent (%).Compared to HEU infants, HUU infants weighed slightly more and had higher adiposity at birth throughout the first 12 months of life.

Figure 3. Infant Growth and Body Composition Outcomes by HIV Exposure Statu

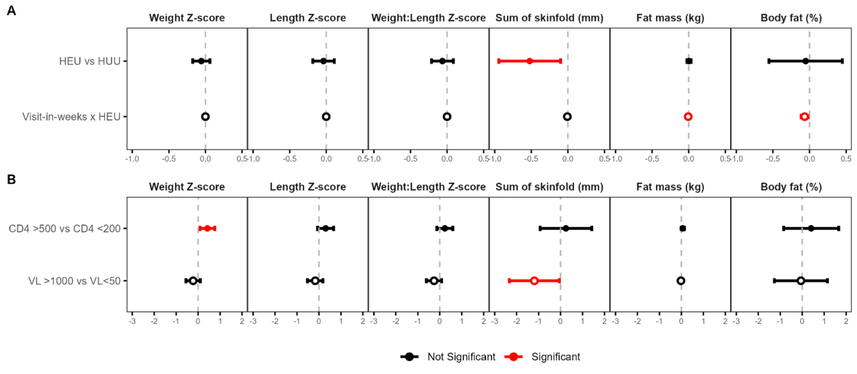


Fig 3. Forest plots. **A**. Mean difference in infant outcomes by HIV exposure status and infant growth over the first year. **B**. Subgroup analysis of HIV-exposed infants, mean difference in infant outcomes by mother's CD4 count and viral load.

- Perinatal HIV exposure was associated with a 0.5 mm lower sum of skinfolds, on average. Infant fat mass and body fat percentage did not differ by perinatal HIV exposure status, however, rate of fat mass gain over the first 6 months of infancy was slower in the HEU group by nearly 7 g which translated to a lower body fat percentage gain of 0.07%.
- Among HEU infants, maternal CD4 count > 500 was associated with higher infant weight. Maternal RNA viral load >1000 was associated with 1.2 mm lower infant sum of skinfolds.

CONCLUSIONS

- In the largest study of body composition comparing HEU and HUU infants, there were no clinically relevant differences in adiposity in the 1st year of life.
- Maternal CD4 and VL were not associated with infant adiposity among HEU infants.
- Future studies with longer follow up will be important to understand if these reassuring data persist.