Association of HIV and dolutegravir with changes in blood pressure during pregnancy and postpartum

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BACKGROUND

- Interest in whether dolutegravir (DTG) is associated with blood pressure (BP) in women living with HIV (WLH)
- Few data from pregnant women, in particular with BP measures from early pregnancy
- Few data with direct comparisons to HIV- controls

METHODS

- The Obesogenic oRigins of maternal and Child metabolic Health Involving Dolutegravir (ORCHID) cohort, September 2021 to December 2023, Cape Town, South Africa
- All WLH were on TDF+3TC+DTG (TLD)
- Follow-up here through 6 weeks postpartum with serial, standardised BP measures (three measures of the left arm using an automated, calibrated BP cuff sized to participant BMI) conducted separate from routine care

Table 1 – Baseline Characteristics of participants stratified by HIV status

Characteristic	WLH (n = 797)	HIV -ve (n = 1097)	Total (n = 1894)
Age - years	30 [26 - 34]	26 [23 - 31]	28 [24, 32]
Gestational Age	13 [9 – 15]	12 [9 – 15]	13 [9 - 15]
Gestational Age less than or equal to 14 weeks	550 (69%)	796 (73%)	1,346 (71%)
Primigravida	158 (20%)	433 (39%)	591 (31%)
BMI - kg/m²	29 [25 - 34]	30 [26 – 35]	30 [25 – 35]
BMI greater than or equal to 30 kg/m²	362 (45%)	544 (50%)	906 (48%)
Current Smoker	60 (8%)	62 (6%)	122 (6.4%)
Mean Systolic Blood Pressure (SD) – mmHg	112(11)	113(11)	112(11)
Mean Diastolic Blood Pressure (SD) - mmHg	66(8)	66(8)	66(8)
Hypertension History	6 (0.8%)	5 (0.5%)	11 (0.6%)
Family History of Hypertension	241 (30%)	361 (33%)	602 (32%)
Antihypertensive use	3 (0.4%)	2 (0.2%)	5 (0.3%)
DTG duration - days	233 [17 - 586]	--	233 [17 - 586]
DTG exposure			
<28 days	226 (28%)	--	226 (28%)
28 – 182 days	140 (18%)	--	140 (18%)
>182 days	429 (54%)	--	429 (54%)

All measures are reported as medians [IQR] and percentages unless mentioned otherwise

- Analyses examined changes in mean systolic and diastolic BP (sBP and dBP) as well as incident hypertension (defined as BP>140/90mmHg or initiation of antihypertensive agents)
- Analyses compared (i) WLH to HIV- controls and (ii) varying durations of DTG use among WLH.

RESULTS

- Between 1894 women were enrolled: 797 WLW, 1097 HIV-
- Median (IQR) age: 28 [24-32]; BMI 30 kg/m2 [25-35]; gestation 13 weeks [9-15]; 31% primigravida; 6% current smokers (Table 1)
- In WLH the median duration of DTG use was 190 days (IQR 16 – 584) and 28% of women initiated DTG in the preceding month

There was no association during pregnancy or postpartum between DTG use and either blood pressure or incident hypertension

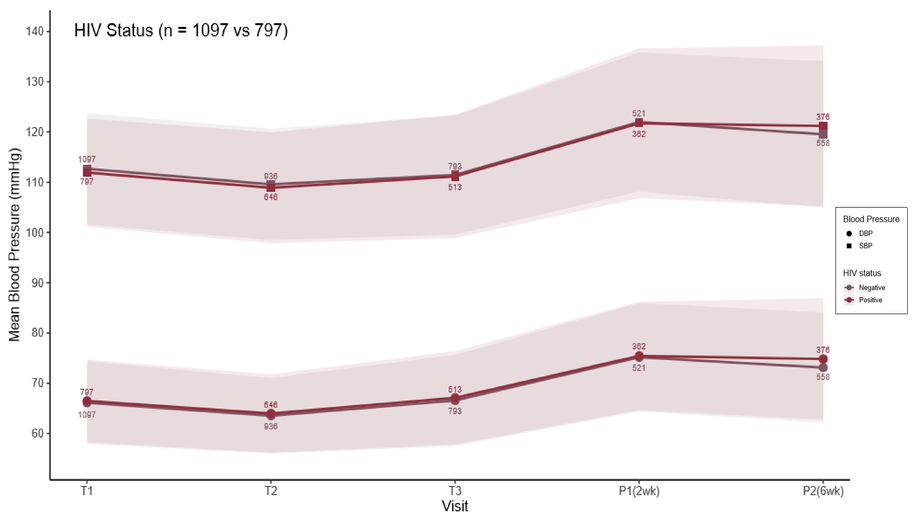


Figure 1 – Plot of mean (SD) systolic blood pressure (SBP) and diastolic blood pressure (DBP) during gestation until 6 weeks postpartum

- Mean sBP and dBP in pregnancy similar throughout pregnancy until 6 weeks postpartum between WLH and HIV-controls (Figure)
- Associations were not altered by adjustment for age, gestational age and BMI.
- Through 6 weeks postpartum 11% of women experienced incident hypertension, with no variation by HIV status (adjusted hazard ratio, 1.20 ; 95% CI, 0.82-1.76) or duration of DTG use
- Absence of any associations was not altered in subgroups of women with BMI<30kg/m² nor in women with their first BP measures <13 weeks' gestation

Table 2 – Crude and adjusted hazard ratios from cox proportional hazards models assessing the association between incident hypertension and HIV status

Characteristic	Univariate analysis			Multivariate analysis*		
	HR	95% CI	p-value	HR	95% CI	p-value
HIV status						
Negative	Ref	--	--	Ref	--	--
Positive	1.44	1.00 - 2.08	0.051	1.20	0.82 - 1.76	0.4
Age	1.07	1.04 -1.10	<0.01	1.05	1.21 - 1.09	<0.01
BMI greater than or equal to 30 kg/m²						
No	Ref	--	--	Ref	--	--
Yes	2.23	1.51 - 3.29	<0.01	1.58	1.05 - 2.39	0.03
Gestational age less than or equal to14 weeks						
No	Ref	--	--	Ref	--	--
Yes	0.35	0.23 - 0.54	<0.01	0.32	0.20 - 0.49	<0.01
Current smoker						
No	Ref	--	--	Ref	--	--
Yes	1.31	0.66 - 2.59	0.4	1.47	0.74 - 2.92	0.3
Family History of hypertension						
No	Ref	--	--	Ref	--	--
Yes	1.12	0.77 - 1.64	0.5	1.16	0.79, 1.70	0.5

HR: Hazard Ratio; CI: Confidence Interval
*Model adjusted for baseline systolic and diastolic blood pressures

CONCLUSIONS

- Reassuring data suggest no association during pregnancy between DTG use and BP or incident hypertension
- Longer durations of follow-up required to understand the possible impacts of DTG on women's health over the lifecourse

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