Poster #1203

Adverse Birth Outcomes Among Perinatally vs. Sexually HIV-Infected Women in Botswana

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Background

Global efforts to improve the health of HIV-positive individuals resulted in substantial improvement in the availability and safety of antiretroviral therapy (ART) for HIV-positive individuals. As a result, a growing, special population is perinatally HIV-infected youth who reached childbearing age. According to UNICEF in 2017, there was an estimated 1.8 million HIV-infected children (<15 years) and ~90% live in sub-Saharan Africa. Adverse birth outcomes among perinatally HIV-infected women (PHIV) may be increased compared with sexually HIV-infected women, but comparisons are potentially subject to bias from use of older ART regimens or other factors.

Objective

This study compared adverse and severe birth outcomes among PHIV women versus sexually HIV-infected women in Botswana.

Methods

- Data were compiled from an ongoing birth outcomes surveillance study at eight government delivery sites in Botswana from July 2014 to June 2018. Pregnant women diagnosed with HIV before their 11th birthday were classified as PHIV; all other women were categorized as sexually HIV-infected.
- Birth outcomes included small for gestational age (SGA) (<10th percentile weight for GA), preterm delivery (PTD) (<37 weeks GA), stillbirth (SB), and neonatal death (ND).
- Chi-square and Fisher's exact tests were conducted comparing birth outcomes among all PHIV women with sexually HIV-infected women within the same age range (15-27 years). Crude and adjusted risk ratios (RR) were determined using log binomial regressions.

Demographics of PHIV vs. SHIV Women in Botswana

	PHIV (n=255)	Sexually HIV-Infected (n=6,773)	P-Value
Median Age of Infection (IQR)[1]	7 [0-9]	21 [19-24]	<0.0001
Median Maternal Age (IQR)[1]	20 [18-22]	24 [21-26]	<0.0001
Education			
Tertiary/Secondary	239 (94.5%)	6040 (91.1%)	0.065
Primary/None	14 (5.5%)	588 (8.9%)	
Occupation			<0.0001
Salaried	38 (15.4%)	1,623 (25.3%)	
Non-Salaried	175 (70.9%)	4,444 (68.6%)	
Student	34 (13.8%)	396 (6.1%)	
Gravida			<0.0001
5+	3 (1.2%)	190 (2.8%)	
2-4	54 (21.3%)	4,166 (61.7%)	
1	197 (77.6%)	2,398 (35.5%)	

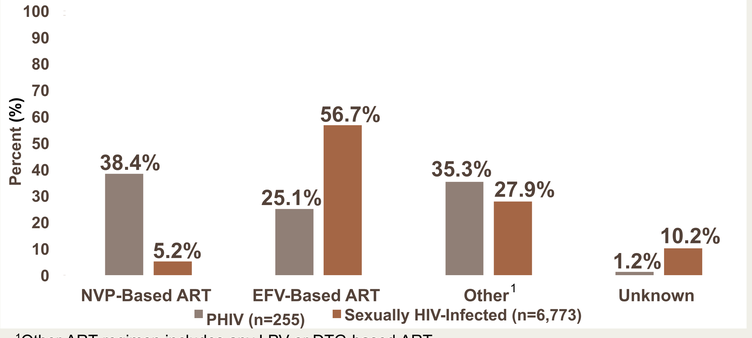
[1]Wilcoxon rank sum test

Risk Ratios for Adverse Birth Outcomes for PHIV Women Compared with SHIV Women

	RR (95%CI)	aRR (95%CI)[1]
Preterm Delivery	1.09 (0.87, 1.37)	1.20 (0.93, 1.56)
Stillbirth	0.76 (0.31, 1.83)	0.90 (0.34, 2.34)
Neonatal Death	0.48 (0.12, 1.91)	0.53 (0.12, 2.31)
Congenital Abnormalities	0.83 (0.37, 1.85)	0.91 (0.38, 2.15)
LBW[2]	1.16 (0.90, 1.49)	0.94 (0.71, 1.25)
SGA	**1.33 (1.07, 1.65)**	**1.06 (0.83, 1.35)**

[1]Adjusted for initial ART regimen prescribed or continued during pregnancy, maternal age, gravida, occupation, and education
[2]LBW = Low birth weight (<2500g)

Initial ART Regimen Prescribed or Continued During Pregnancy



[1]Other ART regimen includes any LPV or DTG-based ART

Limitations

- Self-reported HIV diagnosis date can lead to misclassification of PHIV women
- CD4 and viral load measurements were missing from many of the HIV-positive women and therefore were not included in the final analyses
- Unable to make comparisons among women who delivered <24 weeks GA

Adjusted Risk for Any Adverse Outcome or Severe Adverse Outcome, by Risk Factor

	Any Adverse Outcome[1,4] aRR (95% CI)	Any Severe Adverse Outcome[2,4] aRR (95% CI)
PHIV (n=255)	**1.13 (0.97, 1.32)**	**0.81 (0.57, 1.15)**
Maternal Age	1.00 (0.99, 1.01)	1.01 (0.99,1.05)
Gravida		
≥5	0.95 (0.77, 1.18)	0.77 (0.49, 1.19)
2-4	0.87 (0.80, 0.94)	0.72 (0.61, 0.85)
1	Reference	Reference
Education		
Tertiary/Secondary	0.93 (0.83, 1.05)	0.91 (0.71, 1.17)
Primary/None	Reference	Reference
Occupation		
Salaried	1.10 (0.93, 1.30)	0.85 (0.63, 1.16)
Non-Salaried	1.24 (1.06, 1.44)	1.08 (0.82, 1.43)
Student	Reference	Reference
Initial ART[3]		
NVP-Based ART	**1.33 (1.19, 1.49)**	**1.95 (1.58, 2.39)**
Other	Reference	Reference

[1]Any adverse outcomes include preterm delivery, small for gestational age, neonatal death, and stillbirth
[2]Any severe adverse outcomes include very preterm delivery (<32 weeks), very small for gestational age (<3rd %), neonatal death, and stillbirth
[3]Other ART Regimen includes any LPV, EFV, or DTG-based ART
[4]Adjusted for initial ART regimen prescribed or continued during pregnancy, maternal age, gravida, occupation, and education

Conclusions

- **The impact of being PHIV on adverse birth outcomes is likely to be driven by non-biological factors, such as "legacy" ART regimens during pregnancy, and not likely to be the result of any intrinsic differences between PHIV & sexually HIV-infected women**
- **PHIV women receiving older "legacy" ART should transition to using newer ART regimens**

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