HIV and syphilis coinfection in pregnancy and adverse birth outcomes in Uganda

00930

Timothy M. Kintu[1], Mehal Churiwal[2*], Onesmus Byamukama[1], Ingrid V. Bassett[3,4], Mark J. Siedner[1,3,4], Anacret Byamukama[5], Edna Tindimwebwa[5] Julian Adong[1], Elias Kumbakumba[1], Stephen Asiimwe[5], Joseph Ngonzi[1], Lisa M. Bebell[3,4]

[1]Mbarara University of Science and Technology, Uganda; [2]Columbia University College of P&S and University of North Carolina at Chapel Hill, USA; [3]Massachusetts General Hospital and [4]Harvard Medical School; USA, [5]Kabwohe Clinical Research Centre, Uganda.

BACKGROUND

- Syphilis incidence is increasing worldwide
- Little is known about the combined impact of maternal HIV and syphilis coinfection on birth outcomes, especially in sub-Saharan Africa (sSA)

METHODS

Sample and data collection

- We analyzed data from two prospective birth cohorts enrolled in southwestern Uganda from 2017 – 2023
- Participants were tested for syphilis using a *Treponema pallidum* particle agglutination (TP-PA) rapid test
  - Positive TP-PA test indicates treponemal exposure but cannot distinguish current vs prior infection
- In one cohort, we also tested umbilical cord blood for and performed rapid plasma reagin (RPR) testing for TP-PA positive blood samples.

Data analysis

- ***Primary outcome***: a composite adverse birth outcome, including low birthweight (<2.5kg), stillbirth, neonatal death within 14 days of birth, or 5-minute APGAR<7.
- ***Secondary outcome***: birth weight
- We compared outcomes by HIV and TP-PA seropositivity using chi-square tests.
- We fitted multivariable logistic and linear regression models to determine adjusted associations between maternal HIV and syphilis infection and birth outcomes, including an HIV × TP-PA product term to look for effect modification.

CONTACT

Dr. Timothy Kintu timothykintu@gmail.com
Dr. Lisa Bebell lbebell@mgh.harvard.edu

Syphilis seropositivity was high (12% overall) and higher among women living with HIV (20%).

Syphilis was associated with stillbirth (P = 0.02), *and* HIV seropositivity did not modify the effect of syphilis on birth outcomes (*P* = 0.34).

RESULTS

Of 970 women:

- 94 (10%) were TP-PA positive pregnant people with HIV (PHIV)
- 387 (41%) were TP-PA negative PHIV
- 24 (3%) were TP-PA positive and HIV-negative
- 449 (47%) were TP-PA and HIV-negative

Among TP-PA positive PHIV:

- Mean age: 28±6 years
- 63/94 (65%) initiated ART before conception
- 13% had detectable HIV viremia

TABLE. Multivariable regression – HIV, syphilis, and adverse birth outcomes.

	OR (95% CI)	*P*-value	aOR (95% CI)	*P*-value
Maternal HIV+	1.4 (0.89 - 2.20)	0.14	1.24 (0.75 - 2.05)	0.40
Maternal TPPA+	1.83 (1.02 - 3.28)	**0.04**	1.51 (0.78-2.91)	0.22
Maternal age in years	0.98 (0.94 - 1.02)	0.27	0.97 (0.93 - 1.01)	0.14
Attended ≥4 antenatal care visits	0.60 (0.37 - 0.98)	**0.04**	0.77 (0.46 - 1.30)	0.33
Gestational age in weeks	0.66 (0.59 - 0.74)	**<0.001**	0.66 (0.58 - 0.74)	**<0.001**

RESULTS, cont'd

- **Of 118 (12%) TP-PA positive people, 94 (79%) were PHIV (*P*<0.001)**
- There were **83/970 (6%) adverse birth outcomes:**
  - 13/94 (10%) TP-PA positive PHIV
    - Including 5/93 (5%) stillbirths
  - 20/387 (5%) of TP-PA negative PHIV
  - 2/24 (8%) of TP-PA positive and HIV negative
  - 21/449 (5%) of TP-PA and HIV negative (*P*=0.26)
- Of 54 PHIV with RPR titers, 46 (70%) were <1:32; 8 (15%) were ≥1:32
- In multivariable analysis, gestational age was independently associated with the composite adverse birth outcome, but maternal TP-PA seropositivity and HIV infection were not (**Table**).
  - An HIV × TP-PA product term was not statistically significant.

CONCLUSIONS

- Stillbirth incidence among TP-PA positive PHIV was higher than prior sSA studies.
- The effect of syphilis was the same in both HIV serogroups.
- High TP-PA seroprevalence emphasizes the need to improve prenatal care with enhanced syphilis screening and treatment.

FUNDING

NIH grants: K23AI138856; K24AI141036 R01HD112302
Harvard University Center for AIDS Research National Institutes of Health/National Institute of Allergy and Infectious Diseases (P30AI060354)
The Harvard Clinical and Translational Science Center (KL2TR002542)
Charles H. Hood Foundation
The American Society of Tropical Medicine and Hygiene Burroughs Wellcome Postdoctoral Fellowship

Acknowledgements: We are grateful to our study participants, our partners at Mbarara Regional Referral Hospital and Mbarara University of Science and Technology, and our funders.