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MTCT risk is increased among HIV-infected pregnant women with positive syphilis serology in Ukraine

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To the Editor,

Although syphilis coinfection is a known risk factor for heterosexual transmission of HIV [1,2], its role in mother-to-child transmission (MTCT) is unclear [3-5]. We investigated the impact of maternal positive syphilis serology on MTCT in the Ukrainian sites of the European Collaborative Study, a cohort study of HIV-infected pregnant women and their children; full methods are described elsewhere [6]. The mother-child pairs (MCPs) in this analysis came from a nested sub-study of sexually transmitted infections (STI) [7]: for MCPs enrolled from January 2003 to October 2005, STI test results were extracted from antenatal records and linked to the prospective ECS database; subsequently, one centre started prospective collection of all antenatal STI test results and MCPs enrolled here from October 2005 were also included. Antenatal serological screening was performed with non-trepenomal tests at pregnancy registration and repeated in the third trimester, with confirmatory testing using trepenomal tests, according to national policy. Infected women and their infants were treated with penicillin.

Logistic regression was used to investigate MTCT risk factors. Infants with persistence of HIV antibody beyond 18 months of age and/or a positive HIV PCR test were considered HIV-infected; infants HIV antibody-negative and/or with two negative PCRs were classified as uninfected [6]. Variables considered in the multivariable model were maternal syphilis serology, antiretroviral prophylaxis, elective Caesarean section delivery and premature delivery (<37 completed gestational weeks) and were retained based on Akaike's Information Criterion [6]

There were 521 MCPs with known infant HIV infection status. All women were born in Ukraine, median maternal age was 25.0 years (range, 16.1-43.4) and 66% (n=346) were nulliparous. Injecting drug use (IDU) history was reported by 20% (105/516) women; a further 210 (40%) women reported an IDU sexual partner. Overall, 3.5% (95%CI 2.1-5.4)

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pregnant women had positive syphilis serology, increasing to 5.7% (6/105, 95%CI 2.1-12.0) among women with IDU history (a non-significant difference).

Antenatal CD4 counts were available for 163 (31%) women only, due to limited laboratory capacity. Median CD4 count was 514 cells/mm^3 (IQR, 350-700) overall, with no difference by syphilis status. The HIV MTCT rate was 5.8% (30/521, 95% CI 3.9-8.1%) overall and was significantly higher among women seropositive for syphilis (χ^2=6.4, p=0.011) (Table). Positive antenatal syphilis serology was associated with a five-fold increased MTCT risk univariably and a nearly 4.5-fold increased risk in the adjusted model (Table).

Our study provides the first evidence of an association between maternal syphilis and MTCT risk in an Eastern European setting. A limitation is the lack of maternal HIV RNA quantification in our population, which prevented us from adjusting for this important risk factor for MTCT [6]. However, in a study in Malawi, maternal syphilis coinfection was associated with a 2.6-fold increased risk of in utero HIV transmission univariably and 2.7-fold increased risk independent of maternal viral load [3]. Elimination of congenital syphilis and “virtual elimination” of HIV transmission to infants are key public health goals [8-9], and our findings underscore the need for integration of antenatal syphilis screening and treatment programmes with PMTCT programmes.

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Table

Unadjusted MTCT rates and logistic regression analyses of risk of mother-to-child transmission (n=521)

	Unadjusted MTCT rate	OR (95% CI)	p value	Adjusted OR (95% CI)	p value
Maternal syphilis serology					
Negative	5.2% (26/503)	1.00		1.00	
Positive	22.2% (4/18)	5.24 (16.1-17.0)	p=0.006	4.43 (1.31-15.0)	p=0.02
Antenatal / intrapartum ARV prophylaxis					
None	23.1% (3/13)	1.00		1.00	
Single dose nevirapine only	11.1% (8/72)	0.42 (0.09-1.84)	p=0.25	0.41 (0.09-1.88)	p=0.25
Antenatal ARV prophylaxis	4.4% (19/436)	0.15 (0.04-0.60)	p=0.007	0.19 (0.05-0.80)	p=0.02
Premature delivery					
No	5.1% (25/489)	1.00		1.00	
Yes	15.6% (5/32)	3.44 (1.22-9.68)	p=0.02	2.21 (0.72-6.83)	p=0.17
Elective Caesarean section delivery					
No	8.4% (19/226)	1.00		-	
Yes	3.7% (11/295)	0.42 (0.20-0.91)	p=0.03		

OR, odds ratio; ARV, antiretroviral