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High vertical HIV transmission rate in the Midwest region of Brazil

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ABSTRACT

Objectives: To estimate vertical HIV transmission rate in a capital city of the Midwest region of Brazil and describe the factors related to transmission.

Methods: A descriptive epidemiological study based on the analysis of secondary data from the Notifiable Diseases Information System (SINAN). The analysis considered all HIV-infected pregnant women with delivery in Campo Grande-MS in the years 2007–2013 and their HIV-exposed infants.

Results: A total of 218 births of 176 HIV-infected pregnant women were identified during the study period, of which 187 infants were exposed and uninfected, 19 seroconverted, and 12 were still inconclusive in July 2015. Therefore, the overall vertical HIV transmission rate in the period was 8.7%. Most (71.6%) of HIV-infected pregnant women were less than 30 years at delivery, housewives (63.6%) and studied up to primary level (61.9%). Prenatal information was described in 75.3% of the notification forms and approximately 80% of pregnant women received antiretroviral prophylaxis. Among infants, 86.2% received prophylaxis, but little more than half received it during the whole period recommended by the Brazilian Ministry of Health. Among the exposed children, 11.3% were breastfed.

Conclusion: The vertical HIV transmission rate has increased over the years and the recommended interventions have not been fully adopted. HIV-infected pregnant women need adequate prophylactic measures in prenatal, intrapartum and postpartum, requiring greater integration among health professionals.

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Introduction

The dynamics of Human Immunodeficiency Virus (HIV) infection have changed over time. Initially its spread was identified among men who had sex with men. After some time, there was a pattern change with increased heterosexual transmission of HIV and thus increased incidence of infection in women. Still, the identification of HIV in small cities and low-income population shows the infection is no longer restricted to risk groups, but to those under risk behavior.¹

The increasing number of HIV-infected women, especially of childbearing age, increases the risk of children to be infected by vertical transmission.^{2,3} Acquired Immunodeficiency Syndrome (AIDS) incidence in children under five years is the indicator used to monitor vertical HIV transmission. In 1998, the Brazilian incidence rate of AIDS in children under five years was 5.9/100,000⁴ and this rate reduced to 2.8/100,000 in 2013.⁵ Much of this reduction was due to the availability of zidovudine, as it reduces by two-thirds the possibility of HIV transmission during pregnancy and delivery.⁶ Other prophylactic measures, such as antiretroviral therapy (ART) to the exposed infant, cesarean delivery, replacement of breastfeeding by artificial feeding are part of the current protocol recommended by the Brazilian Ministry of Health.⁷

For proper epidemiological surveillance, the reporting of cases of AIDS began in 1986.⁸ In 2000, the Brazilian Ministry of Health established compulsory notification of HIV infection in pregnant women, whose notification form also contemplated information about the exposed infants.⁹ In 2007, the joint notification of pregnant women and newborns was disconnected due to operational difficulties related to the place of care. So, it was established a specific notification tool for exposed children and another instrument for HIV infection in pregnant women.¹⁰

Despite all the existing interventions, vertical HIV transmission is still a reality. Thus, the aim of this study was to estimate vertical HIV transmission rate in a capital city of the Midwest region of Brazil and describe the factors related to transmission.

Material and methods

Study design and population

This descriptive epidemiological study was based on the analysis of secondary data from the Notifiable Diseases Information System (SINAN). The analysis considered all HIV-infected pregnant women with delivery in Campo Grande-MS in the period of 2007 to 2013 and their HIV-exposed infants.

All mothers included in the study had documented HIV infection before or during pregnancy, at the time of admission for delivery or while breastfeeding. Infections were documented by the result of positive serology for HIV-1 by ELISA and confirmed by indirect immunofluorescence or Western Blot test.

To be considered infected, the exposed infant should have a positive screening test (ELISA) confirmed by indirect immunofluorescence or Western Blot. Closing of cases was possible at 12 months for those infants who had two results of

an undetectable viral load and negative result for anti-HIV, or at 18 months for those who had one result of an undetectable viral load and negative anti-HIV.

The vertical HIV transmission rate was calculated using number of exposed children who seroconverted in the numerator and the total number of HIV-positive pregnant women in the period in the denominator, multiplied by 100.

Data collection and analysis

A database was organized to collect information regarding HIV-infected pregnant women (education, race, occupation, age at delivery, prenatal care, antiretroviral prophylaxis during pregnancy and delivery, type of delivery) and their exposed infants (antiretroviral prophylaxis, weeks of prophylaxis, and breastfeeding). These epidemiological data were obtained from notification forms of HIV-positive pregnant women and HIV exposed children.

For purposes of this study, prenatal care was considered as any number of medical or nursing appointments during pregnancy. The record of any breastfeeding at any time and for any duration was defined as "breastfeeding present". In addition, infant anti-HIV positivity or death within 60 days was used as criteria to define possible infection in uterus, while identification of infection after 60 days was considered as intrapartum infection. The identification of HIV infection in the baby using PCR was not performed.

The univariate assessment of the association between HIV infection and age at delivery, prenatal care, antiretroviral use during pregnancy and delivery, type of delivery, weeks of antiretroviral prophylaxis to the exposed infant, and breastfeeding were performed using the chi-square test. Multivariate logistic regression analysis, using the "Enter" method, was performed to assess the association between the presence or absence of infection and the other variables assessed in this study. The results of the statistical analysis are presented as *p*-values, odds ratio and 95% confidence interval of the odds ratio. Statistical analysis was performed using SPSS, version 22.0, considering a 5% significance level.

Ethical aspects

The study was approved by the Research Ethics Committee in Human Beings of the Federal University of Mato Grosso do Sul under the CAAE number 05705412.0.0000.0021.

Results

One hundred and seventy-six HIV-infected pregnant women who delivered in Campo Grande-MS in the period of 2007 to 2013 were identified, resulting in 218 births. The number of births is higher than the number of pregnancies because some women had more than one pregnancy in the period. Of total births, 187 infants were exposed to HIV and uninfected, 19 seroconverted and 12 were still inconclusive by July 2015. Thus, the overall vertical HIV transmission rate in the period was 8.7%, while the transmission rate in 2007 (0/2) and 2008 (0/20) was 0%, 9.1% (2/22) in 2009, 10.5% (4/38) in 2010, 9.1% (4/44) in 2011, 12.5% (5/40) in 2012 and 10.0% (4/40) in 2013.

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