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Original article

Pregnancy as an opportunity to diagnose human-immunodeficiency virus immigrant women in Catalonia[☆]



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ABSTRACT

Introduction: Mother-to-child transmission (MTCT) is relevant in the global epidemiology of human-immunodeficiency virus (HIV), as it represents the main route of infection in children. The study objectives were to determine the rate of HIV-MTCT and its epidemiological trend between the Spanish-born and immigrant population in Catalonia in the period 2000–2014.

Methods: A prospective observational study of mother–child pairs exposed to HIV, treated in 12 hospitals in Catalonia in the period 2000–2014. HIV-MTCT rate was estimated using a Bayesian logistic regression model. R and WinBUGS statistical software were used.

Results: The analysis included 909 pregnant women, 1009 pregnancies, and 1032 children. Data on maternal origin was obtained in 79.4% of women, of whom 32.7% were immigrants, with 53.0% of these from sub-Saharan Africa. The overall HIV-MTCT rate was 1.4% (14/1023; 95% CI; 0.8–2.3). The risk of MTCT-HIV was 10-fold lower in women with good virological control ($P=0.01$), which was achieved by two-thirds of them. The proportion of immigrants was significantly higher in the period 2008–2014 ($P<.0001$), for the HIV-diagnosis ($P<0.0001$), and antiretroviral administration ($P=0.02$) during pregnancy, and for undetectable viral load next to delivery ($P<0.001$). There were no differences in the rate of MTCT-HIV among Spanish-born and immigrant women ($P=0.6$).

Conclusions: There is a gradual increase in HIV pregnant immigrants in Catalonia. Although most immigrant women were diagnosed during pregnancy, the rate of MTCT-HIV was no different from the Spanish-born women.

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El embarazo como una oportunidad de diagnóstico del virus de la inmunodeficiencia humana en mujeres inmigrantes en Catalunya

RESUMEN

Introducción: La transmisión vertical (TV) es relevante en la epidemiología global del virus de la inmunodeficiencia humana (VIH), representando la principal vía de infección en la edad pediátrica. Los

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objetivos del estudio fueron determinar la tasa de TV del VIH y su tendencia epidemiológica entre la población autóctona e inmigrante en Catalunya entre 2000-2014.

Métodos: Estudio observacional prospectivo de parejas madre-hijo expuestas al VIH atendidas en 12 hospitales de Catalunya en 2000-2014. Se estimó la tasa de TV del VIH aplicando un modelo bayesiano de regresión logística. Se utilizó el software estadístico R y WinBUGS.

Resultados: Se analizaron 909 gestantes, 1.009 embarazos y 1.032 niños; datos de origen materno en el 79,4% de las mujeres, el 32,7% inmigrantes y de estas el 53,0% de África subsahariana. La tasa de TV del VIH fue del 1,4% (14/1.023; IC95% 0,8-2,3). El riesgo de TV del VIH fue 10 veces menor en mujeres con buen control virológico ($p=0,01$), al que llegaron 2 tercios de ellas. No hubo diferencias en la tasa de TV del VIH entre mujeres autóctonas e inmigrantes ($p=0,6$). La proporción de mujeres inmigrantes fue significativamente mayor en el período 2008-2014 ($p<0,0001$), en relación con el diagnóstico de la infección por VIH ($p<0,0001$) y la administración de antirretrovirales ($p=0,02$) durante el embarazo, y con la viraemia indetectable próxima al parto ($p<0,001$).

Conclusiones: Existe un aumento progresivo de gestantes inmigrantes con VIH en Catalunya. Aun siendo la mayoría diagnosticadas durante el embarazo, la tasa de TV del VIH no fue diferente a la hallada en las mujeres autóctonas.

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Introduction

Mother-to-child transmission (MTCT) of human immunodeficiency virus (HIV) during pregnancy, delivery or breastfeeding represents the most common route of infection in children and is a determining factor in the global epidemiology of HIV and AIDS among the paediatric population.¹ Since the start of the HIV/AIDS pandemic, we have seen enormous progress in relation to the prevention of HIV MTCT, including access of infected pregnant women to antiretroviral therapy (ART), with subsequent control of viral replication, the main factor that has prevented more than 900,000 new infections in children since 2009.¹ Furthermore, the introduction of ART has drastically reduced HIV-related morbidity and mortality and has generated a better quality of life and prognosis for people living with HIV.²

In Spain, 3366 new cases of HIV infection were reported in 2014; the estimated rate of new HIV diagnoses in 2014 was 9.34/100,000 inhabitants. 85% of new diagnoses were men, the median age was 35 years and 32.5% of new diagnoses involved people originally from other countries. Among women, heterosexual transmission accounted for 80.3% of new diagnoses.³

Growing economic inequality between different countries has determined new migration flows that have increased over the last 20 years. Spain is one of the countries receiving this population, which accounted for 9.6% of the population registered at the end of 2014, representing an absolute figure of 4,447,852 people.⁴ HIV infection in immigrants shows different characteristics to those of the native population. Most of the studies conducted indicate that HIV in immigrants is often diagnosed at a late stage, when the immunological classification and staging of HIV is advanced and the patient already has infectious or tumour complications of AIDS.^{5,6} Since 2010, new diagnoses of HIV infection in non-native individuals have accounted for approximately one-third of all new diagnoses in all 17 autonomous communities of Spain.³ It is important to note that more than 50% of new diagnoses in women and 43.4% of sexually-transmitted infections occur in immigrants, mainly of Latin American and sub-Saharan origin.³

In Catalonia, a constant increase has been observed in the proportion of new diagnoses of HIV infection among the migrant population, representing 41% of all cases reported in 2014 compared to just 24.6% in 2001, and 53% of the people affected were originally from Latin American and Caribbean countries.⁷ The number of new cases of HIV among men who have sex with men is still on the increase and is especially high among immigrants (3.7/100 people per year).⁷

The objectives of our study were to estimate the rate of HIV MTCT and its evolution over time among the native and immigrant population in Catalonia between 2000 and 2014, and to identify possible determinants of transmission in these populations.

Methods

A prospective observational study conducted from data collected in the NENEXP cohort from 1 January 2000 to 31 December 2014. All participating sites were authorised by the respective ethics committees. The NENEXP cohort includes mother-child pairs exposed to HIV and treated at 12 hospitals in Catalonia who meet the following criteria: 1. mother diagnosed with HIV infection before, during or a maximum of 72 hours after delivery; 2. to have agreed to participate in the study by signing the informed consent form.

Data were collected systematically from an agreed database by the study investigators. The following data were collected: invariable data for the mother: date of birth, date of HIV infection diagnosis, country of origin, probable route of infection and clinical stage of HIV infection, AIDS classification, and hepatitis B virus (HBV) and hepatitis C virus (HCV) co-infection; pregnancy data: number of pregnancies, number of deliveries, multiple birth, date of last period, HIV viral load (VL) and CD4+ lymphocyte count closest to the delivery date, mother's toxic habits during pregnancy and mother's ART; delivery data: date of delivery, type of delivery (vaginal, caesarean during labour or elective caesarean), gestational age, and administration of zidovudine (ZDV), lamivudine, nevirapine or other intrapartum antiretroviral drugs; and invariable data for the child: date of birth, gender, weight, length and head circumference at birth, preterm (term, moderately preterm or extremely preterm), antiretroviral prophylaxis administered, final HIV infection status (HIV infected, HIV uninfected, indeterminate HIV infection status) and final vital status of the child. The HIV MTCT infection definitions used were based on Spanish Recommendations.⁸

Maternal, pregnancy, delivery and neonatal variables were described using frequencies, ratios, means, standard deviations and quartiles, depending on the type of variable. Also, the link between the mother's country of origin and qualitative variables was explored using the Chi-square test (or Fisher's exact test) while the link between the mother's country of origin and quantitative variables was explored using Student's *t*-test.

The rate of HIV MTCT (number of children infected/total number of children excluding children with indeterminate status) was estimated with a 95% confidence interval, and a Bayesian logistic regression model was used for analysis purposes, contemplating

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