Outcome of HIV-infected Pregnant Women and Their Offspring in Barbados: A Five-year Study

MA St John[1], F Denny[2], D Babb[2]

ABSTRACT

Objective: *To describe the outcome of HIV-infected pregnant women and their offspring during a five-year period.*

Methods: *The medical records of HIV-infected pregnant women who delivered between January 2007 and December 2011 and their HIV-exposed infants were reviewed. Demographics, outcome of pregnancy and infants, and clinic attendance were analysed. Data were entered on a Microsoft Excel spreadsheet.*

Results: *One hundred and forty-three women, aged 17–45 years (mean 27.3 years), were included in the study with 143 pregnancies and 142 pregnancy outcomes being recorded. One woman migrated before delivery. There were 122 live births and 18 (13%) terminations: 13 (9%) elective and five (4%) spontaneous. There was one ectopic pregnancy and one stillbirth. One hundred and twenty-two (85%) women were unmarried. Women were prescribed highly active antiretroviral therapy for prevention of mother-to-child transmission from the time of booking, apart from those opting for terminations or those who had spontaneous abortions. For clinic follow-up, 105 (73%) had regular attendance, 30 (21%) defaulted and could not be located despite intense tracking, four attended irregularly, and one refused to attend clinic. Four (3%) migrated after delivery. Two (1%) mothers died during the period of study. Two successive DNA polymerase chain reaction tests done within four months of age did not substantiate any cases of infant infection.*

Conclusion: *This study revealed that there was a good outcome and compliance with follow-up of HIV-infected pregnant women and their offspring.*

Keywords: HIV-infected women, HIV outcome, pregnancy

Resultados Clínicos de Mujeres Embarazadas Infectadas por el VIH y Sus Hijos en Barbados: Un Estudio de Cinco Años

MA St John[1], F Denny[2], D Babb[2]

RESUMEN

Objetivo: *Describir los resultados clínicos de las mujeres embarazadas infectadas por el VIH y sus hijos durante un período de cinco años.*

Métodos: *Se revisaron las historias clínicas de mujeres embarazadas infectadas por el VIH que dieron a luz entre enero de 2007 y diciembre de 2011, y las de sus bebés expuestos al VIH. Se analizaron los datos demográficos, la evolución clínica del embarazo, la asistencia clínica, y la atención a los bebés. Los datos fueron introducidos en una hoja de datos de Microsoft Excel.*

Resultados: *Ciento cuarenta y tres mujeres, de 17 a 45 años (27.3 años promedio), se incluyeron en el estudio, registrándose 143 embarazos y 142 resultados de embarazo. Una mujer emigró antes del parto. Hubo 122 nacimientos vivos y 18 interrupciones (13%): 13 electivas (9%) y cinco (4%) espontáneas. Hubo un embarazo ectópico y un mortinato. Ciento veinte y dos (85%) mujeres eran solteras. A las mujeres se les prescribió terapia antirretroviral altamente activa para la prevención de la transmisión de madre a hijo desde el momento del registro, aparte de aquellas que optaron por la interrupción, o tuvieron abortos espontáneos. En el seguimiento clínico, 105 (73%) tuvieron asistencia regular, 30 (21%) abandonaron y no pudieron ser halladas a pesar de un rastreo intenso, cuatro asistieron de manera irre-*

From: [1]The Queen Elizabeth Hospital, Martindales Road, St Michael, Barbados and [2]Ladymeade Reference Unit, Ministry of Health, St Michael, Barbados.

Correspondence: Dr MA St John, The Queen Elizabeth Hospital, Martindales Road, St Michael, Barbados, West Indies. Fax: 246 429 5374; e-mail: mastj@caribsurf.com

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gular, y una se negó a asistir a la clínica. Cuatro (3%) emigraron después del parto. Dos madres (1%) murieron durante el período de estudio. Dos pruebas sucesivas de reacción en cadena de la polimerasa ADN hechas dentro de cuatro meses de edad, no corroboraron que hubiesen casos de infección infantil. ***Conclusión:*** *Este estudio reveló que hubo un buen resultado clínico y que se cumplió con el seguimiento de las mujeres embarazadas infectadas por el VIH y sus hijos.*

Palabras claves: Mujeres infectadas por el VIH, resultado clínico del VIH, embarazo

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INTRODUCTION

The UNAIDS World AIDS Day report in 2011 (1, 2) reveals that at the end of 2010, the world's population contained an estimated 34 million adults living with HIV/AIDS, consisting of 30.1 million adults, 16.8 million women and 3.4 million children aged less than 15 years. Of these, newly infected cases comprised 2.7 million, with 2.3 million being adults and 390 000 aged less than 15 years. There were 1.8 million deaths: 1.5 million in adults and 250 000 in children aged less than 15 years. In the Caribbean, the prevalence of HIV was 0.9% (range 0.8% to 1%); 200 000 people were estimated to be living with AIDS, which was the leading cause of death in the 25–44-year age group.

In Caribbean Epidemiology Centre (CAREC) member countries, the seroprevalence of HIV in the general population is estimated to be 0.9%, ranging from 0.8–1%. Data from CAREC also reveal that paediatric cases account for 6% of total HIV/AIDS cases (3, 4) with mother to child transmission being the leading transmission route. Research documented by Dunn *et al* (5) and Nduati *et al* (6) has demonstrated that breastfeeding post delivery has resulted in a significant degree of mother to infant transmission.

In Barbados, the prevalence of HIV infection in pregnant women has been estimated by Kumar *et al* to range between 0.6% and 0.8% (7). The annual number of cases of live born infants delivered by HIV-infected pregnant women on the island has shown varying trends during the last decade (Table 1).

The World Health Organization (WHO) Health Services research has shown that during 2003, only 8% of the world's females had been offered prevention of mother-to-child transmission (PMTCT) services and that in the Caribbean, a corresponding 34% of PMTCT services were delivered.

Original research from a multi-centre collaborative trial conducted by Connor *et al* (8), reported in the New England Medical Journal in the mid 1990s, demonstrated a significant reduction in mother to infant transmission of HIV with the intervention of long course zidovudine therapy during pregnancy, in labour and to the infant. Following this discovery, the introduction of a PMTCT programme was initiated at a national level in Barbados from 1995. The intervention of zidovudine as monotherapy administered during pregnancy and to the exposed infants resulted in a significant reduction in the rate of mother-to-child transmission (MTCT) of HIV in Barbados during subsequent years (9). Nevirapine PMTCT prophylaxis was implemented a few years afterwards (10).

As part of the expanded response of the National HIV/AIDS Programme, the Ladymeade Reference Unit (LRU) was established in 2002 as a primary care public health facility for HIV-infected individuals and as a specialty centre, inclusive of highly active antiretroviral therapy (HAART), for the provision of antiretroviral treatment and on site laboratory monitoring. Also from January 2002, the provision and initiation of HAART has been prescribed for HIV-infected pregnant women for prophylactic MTCT of the HIV.

A number of other interventions have also contributed to a further reduction and prevention of transmission (11). These included the integration and expansion of voluntary counselling and testing during antenatal care, and counselling on infant feeding with continued recommendations against breastfeeding.

Infants born to infected mothers were followed-up at the paediatric outpatient clinic of the Queen Elizabeth Hospital. Scaling-up of the PMTCT efforts involved the location, tracking and timely referral of HIV-infected pregnant women to the LRU facility in parallel with their routine antenatal visits. The objective of the current study was to describe the outcome of HIV-infected pregnant women and their offspring during the five-year period from January 1, 2007 to December 31, 2011.

SUBJECTS AND METHODS

This was a descriptive study. The study population included all women who were diagnosed on the basis of a positive HIV serological test, from the time of booking to the end of their pregnancy, between January 1, 2007 and December 31, 2011. The attendance, demographics, compliance with follow-up and outcome of HIV-infected pregnant women who had been referred to the LRU were examined. Pregnant women who were HIV negative at the initial booking at clinic and found to test HIV positive in the postnatal period were excluded from the study.

All pregnant women who had been booked at the LRU had received HAART for PMTCT prophylaxis, with the exception of those who opted for a termination of pregnancy. Data were extracted from the Labour Ward register of births at the QEH and each patient's medical record at the LRU.

Data extracted included date of birth, marital status, outcome of pregnancy and outcome of mother, number of preg-

nancies and attendance to LRU appointments. Regular attendance at clinic was defined as attendance for six months after their delivery, even if not on antiretroviral therapy. Defaulting was defined as not attending the six-week postnatal visit or at any time subsequent to delivery. Information was entered in a database spreadsheet using Microsoft Excel version 2004; calculations were made, and graphs, tables and figures were generated.

RESULTS

One hundred and forty-three women were included in the study with 143 pregnancies and 142 pregnancy outcomes being recorded. One woman migrated before the time of her delivery (Fig. 1). Of the women followed until delivery, the majority (99%) of live births took place at the Queen Elizabeth Hospital, with the exception of two cases in which the infants were born before arrival of the mother at the hospital.

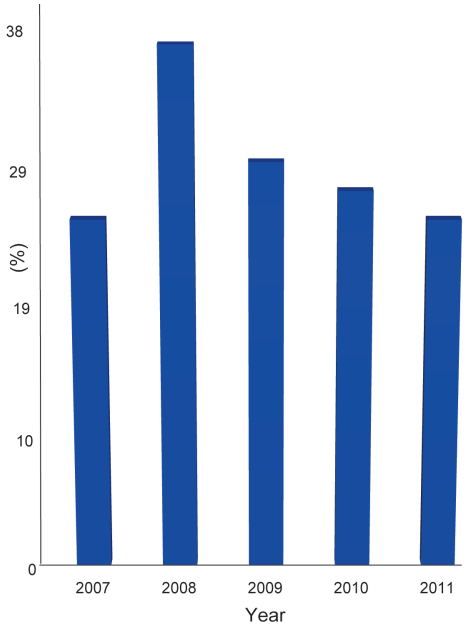

Fig. 1: Pregnancies by year.

The ages of the women ranged from 17 to 45 (mean 27.3) years. One hundred and twenty-two (85%) women were single and unmarried, 10 (7%) married, two (1%) separated from their husbands, one (1%) divorced and in eight, (5%) the status was undocumented (Fig. 2).

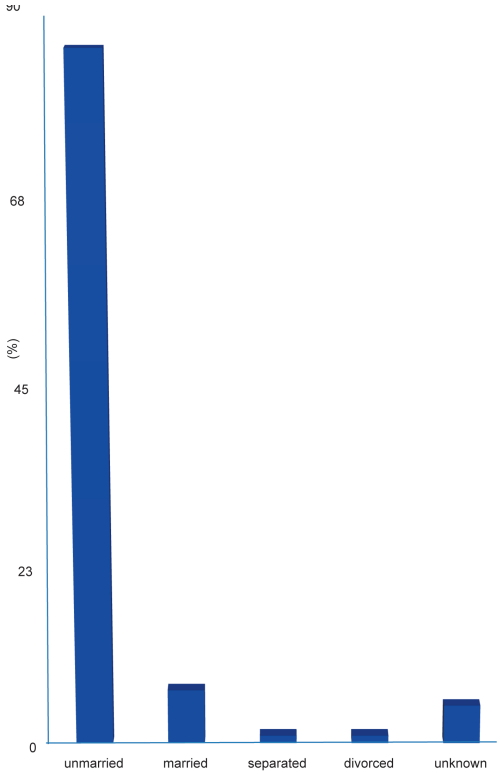

Fig. 2: Marital status of women.

Outcomes of pregnancies

There were 122 (86%) live births, 13 (9%) elective terminations of pregnancy, five (4%) spontaneous abortions, one ectopic pregnancy and one stillbirth (Table 1). One of the women migrated before she had given birth. All of the women were prescribed HAART for PMTCT from the time of booking, apart from those opting for terminations or those who had spontaneous abortions. There were four repeat pregnancies (3%) by four women within the period of study and five women who had had previous pregnancies post diagnosis of being HIV infected.

Compliance with follow-up

Clinic follow-up data (Table 2) revealed 105 (73%) women with regular attendance and 30 (21%) who defaulted and could not be located despite intense efforts of the public health nurse of the LRU to track them. Of those remaining, two had irregular attendance at clinic and one refused to attend clinic. Four

Table 1: Outcome of pregnancies

Year	Spontaneous abortions	Ectopic pregnancy	Terminations	Stillbirths	Live births
2007	2	1	1	–	21
2008	–	–	6	–	31
2009	–	–	1	–	27
2010	1	–	1	–	25
2011	2	–	4	1	18
Total	**5 (3%)**	**1 (1%)**	**13 (9%)**	**1 (1%)**	**122**

Table 2: Follow-up in infected women

Outcome	Number	(%)
In care, regular visits	105	73
Defaulted	30	21
Visits irregular	2	1
Refusal to attend	1	1
Migrated	4	2
Deceased	2	1

(3%) had migrated during the study period and could not be located despite efforts to contact them through relatives. Two (1%) mothers died during the period of study at varying times after they had given birth.

None of the infants born to infected mothers was proven to be infected after being investigated with two DNA polymerase chain reaction (PCR) tests done by four months of age. HIV antibody enzyme-linked immunosorbent assay (ELISA) testing performed after one year of age was negative in all infants who were seen and tested at the paediatric follow-up clinic.

Analysis of clinic attendance and outcome by year revealed that there was a gradual increase from the previous 50% rate, indicating a generally good improvement in attendance for follow-up within the five-year period.

DISCUSSION

The paediatric HIV epidemic continues to wreak havoc in many countries of the world, especially in the Caribbean region (12, 13) where the prevalence is rated as high. Reducing mother to child transmission is the key to reducing this epidemic. Data from a study published a few years ago by Babb and St John (12), previously provided data for a relative comparison on the compliance with follow-up of HIV-infected pregnant women. These individuals, who were found to have positive serological HIV, had been referred to the LRU, the dedicated centre where HIV infected individuals in Barbados receive medical care on an outpatient basis.

In that study, 32% of women were on HAART during pregnancy and there was a mean attendance to the specialty clinic of 61%, with the greatest percentage of attendance being amongst the women who had been treated with HAART for PMTCT (12).

The findings of the past study had resulted in concerns that many HIV-infected pregnant women, although referred from appropriate agencies, were not attending the LRU for management of their HIV infection during pregnancy. It was also suspected that several of the infants born to known HIV-infected mothers had not been brought in for follow-up visits to the paediatric outpatient clinic, where their HIV exposure and/or infection could be monitored by the paediatric consultant and team responsible for such care.

The study results also revealed an overall annual compliance with clinic attendance of less than 50%, with ongoing attendance being described by the authors as reasonably poor (12). The majority of women (92.4%) had an initial visit to the adult HIV public health facility at the LRU, however, ongoing attendance to the unit was relatively poor. The mean attendance during pregnancy was 61%, while the annual level of attendance between 2002 and 2004 was less than 50%, and 53% for the first six months of 2005. A significant proportion of women presented for initial LRU appointments after delivery, and in some instances, a considerable time period had passed since the documented birth.

In another previously reported study, Babb *et al* (14), looking at pregnant women between 1990 and 2006, reported a 38.4% prevalence of repeat pregnancy amongst the group of HIV-infected pregnant women studied. The high numbers of repeat pregnancies in HIV-infected women continues to pose a challenge globally for healthcare providers, especially in developing countries. The results of the current study revealed a reduction in the pattern of repeat pregnancies, with a prevalence of 3%. This outcome constituted a very positive development.

Data gathered in this study also revealed that there was a definite improvement in several parameters in clinic attendance of infected pregnant women. There also appeared to be an improved level of disclosure and improvement in the level of data collection, in relation to pregnancies which did not come to term. With regard to the offspring and follow-up, one hundred per cent of infants were brought to the paediatric clinic for follow-up care and testing during the period of study.

It can be concluded from this study that the outcome and attendance of HIV-infected pregnant women to the LRU specialty unit over the five-year period have improved since the previous review. The compliance with follow-up visits for infants has been extremely good. Continued and sustained efforts in the area of detection, management and care of HIV in women of childbearing age, with particular attention to counselling and close follow-up of the two groups of mother and infants, are recommended. With this being achieved, the region will be well on its way to achieving the ultimate goal of elimination of HIV transmission from mother to child.

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