

Mother to Child Transmission of HIV; Are We Doing Enough?

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Abstract

Aim: A retrospective audit was conducted from 1st January 1996 to 31st December 2006 to assess the incidence of mother to child transmission of HIV and to assess changing trends over the last 10 years as well as the ethnicity of the patients.

Methods: All cases of HIV positive women delivered during the time period were considered. Age distribution, marital status women, parity, pregnancy planning, coinfection with Hepatitis B, Hepatitis C and Syphilis, gestational age at delivery, duration of rupture of membranes, mode of delivery and sex of the child were analyzed. Babies were followed up with HIV PCR at 6, 12 and 18 months.

Results: Of a total of 31 cases and 23 mothers, 3 cases were lost to follow-up. From the remaining 28 cases, only one infant tested HIV positive; hence, mother to child transmission rate was 3.6%. Of the 23 mothers, 22 (96%) are of African origin and 1 (4%) is ethnic Irish. Most patients were primigravida or para 1.

Conclusion: The known correlation between the longer duration of rupture of membranes and the increased transmission of HIV was evident in the one case where mother to child transmission took place.

Keywords: Human immunodeficiency virus, Hepatitis B, VDRL (Venereal disease reference laboratory).

INTRODUCTION

The number of HIV infections in Ireland is increasing. By the end of 2006, Ireland had a total of 4419 HIV cases. The mode of transmission was known in 93% of the cases of which, approximately 40% had been infected through heterosexual contact, 32% through injecting drug use and 23% among men who have sex with men.¹ Although risky sexual behavior commonly is related to alcohol and drug abuse as a means of AIDS transmission, an important factor for the increase in the number of HIV positive people in Ireland has been the migration of individuals from HIV endemic areas. According to the country's national disease surveillance center (NDSC), 364 new cases in were reported 2002, with over half of them involving immigrants born in sub-Saharan Africa.² By the end of 2006, the cumulative number of reported mother-to-child transmission cases was 37. In 2006 alone, HIV infected mothers gave birth to 115 infants, of which 2 were confirmed to be infected with HIV.¹ As HIV is more common in the young, sexually active and the fertile age group, concern for mother to child transmission of HIV is common in obstetric units.

Data from the health protection surveillance center in Ireland document that 98.4% of pregnant women accepted HIV testing and, of these women 2.48% tested positive. Universal screening, early detection, viral load estimation, use of HAART, appropriate choice of mode of delivery and bottle feeding have contributed to reducing the transmission rate to less than 2% in the United States and Europe.³ The initiation of triple therapy

from 28 weeks with a plan for the mode of delivery depending on the viral load and coexistent infection is essential, because the transmission of HIV is 2-30% ante partum, 70-75% intra-partum and 50% if the baby is breast fed. Appropriate measures must be in place in each stage of childbearing to reduce transmission rates. Integrated care between the obstetrician, infectious diseases specialist, midwife, pediatrician and social worker is essential for the best possible outcome.

METHODS

A retrospective audit was conducted at the University College Hospital Galway, from the 1st of January 1997 to the 31st of December 2006, to evaluate the incidence of mother to child transmission of HIV. The database was accessed to identify HIV positive women who delivered a baby within the given period. Women diagnosed with HIV within the study period and delivered a baby outside the study period were excluded, as were women diagnosed with HIV within the study period but receiving obstetric care elsewhere. All babies were identified from the computer database and a chart search was undertaken to assess their follow-up. Babies lost to follow-up were excluded from the study. Telephonic enquiry from the viral reference laboratory documented the viral loads of the babies. Maternal data was obtained with regards to the year of delivery, maternal age, parity, marital status, race, planning of the pregnancy, additional associated sexually transmitted diseases, gestational duration at delivery, duration of rupture of membranes, mode of

delivery and sex of child. Pediatric files were analyzed with regards to whether the baby had been given antiretroviral therapy, the HIV PCR (Polymerase chain reaction) at 6 months, 12 months and 18 months. A HIV PCR at 18 months was not obtained for all babies; hence, all babies testing negative for HIV PCR at 6 months with no further follow-up were assumed to be HIV negative.

All babies received Zidovudine for 4 weeks. If the viral load was greater than 1000 or the rupture of membrane to delivery interval was greater than 12 hours, then the neonates were given 4 weeks of Zidovudine and Lamivudine.

RESULTS

Thirty-one deliveries to 23 HIV positive mothers took place within 1/1/1996 and 31/12/2006. Of these, 28 were seen in the postnatal period and three were lost to follow-up. When the yearly distribution of the incidence of HIV was calculated, the sudden rise in the number of HIV positive mothers in 2002 was noted and it continued to stay equally high till 2006 as depicted in Figure 1. From these same pregnancies, records regarding pregnancy planning were available on 29. Forty-one percent (12) were unplanned and 59% (17) were planned. Twenty of the 31 cases were married and 11 unmarried.

Table 1 shows the age distribution, with majority of the pregnancies occurring within the age group of 25-30. Twenty-two of the 23 women were of African origin while one woman was of ethnic Irish origin.

Six mothers were coinfecting with Hepatitis B. There was coinfection with Hepatitis C only in two mothers, of which one was Hepatitis B positive as well. Three mothers also tested positive for Syphilis.

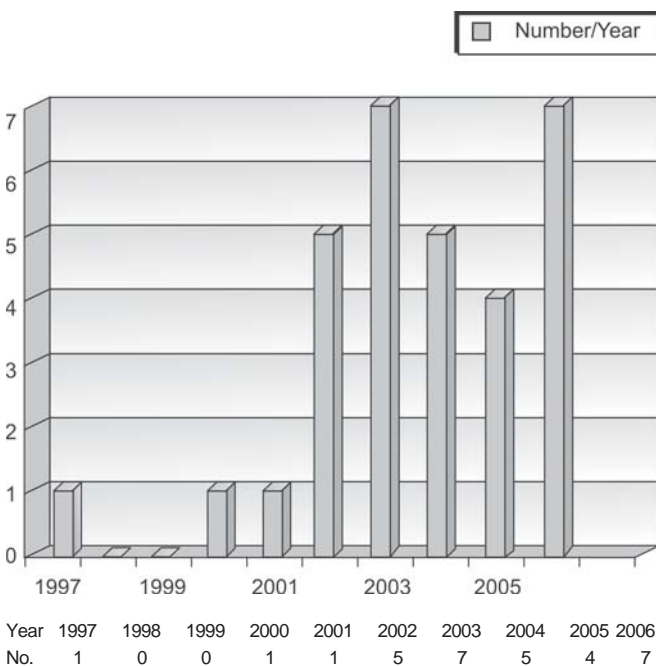


Fig. 1: Yearly distribution of the cases of HIV

Table 1: Age distribution of the mothers

Age group	16-20	21-25	26-30	31-35	36-40
Number	3	7	14	5	2

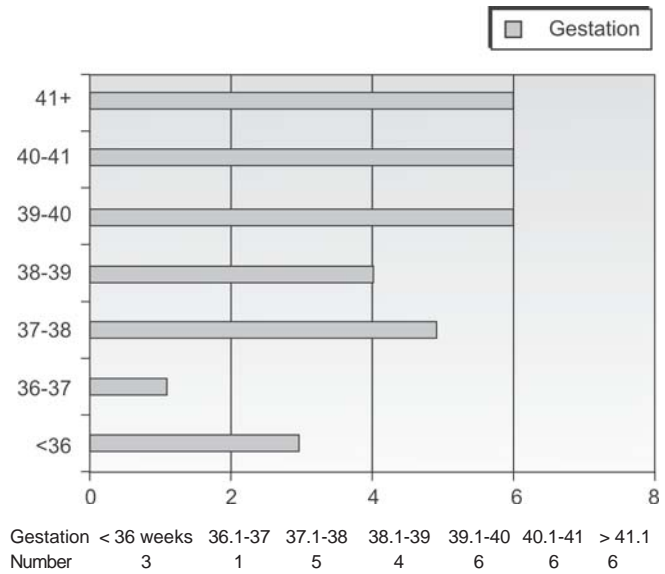


Fig. 2: Gestation at delivery

Majority of the deliveries were conducted beyond 39 weeks pregnancy, of which 38.7% were postdated pregnancies. Babies were delivered between 37 and 40 weeks in 15 (48.4%) pregnancies. Four babies were delivered preterm accounting for 12.9% as depicted in Figure 2.

All the pregnancies were singletons with 18(58.1%) females and 13(41.9%) males. Figure 3 depicts the mode of delivery. Eighteen women delivered vaginally including one forceps delivery. Of the thirteen delivered by cesarean section, 9 were elective and four were performed as an emergency. Of the 9 elective sections, 5 were for obstetric reasons and 4 were a result of the mothers HIV viral load. One of the four emergency sections one was indicated due to the high viral load.

As evident in Table 2, 76% of women delivered within 12 hours of membrane rupture. One baby that was diagnosed as being HIV positive and in this particular instance the mother had ruptured her membranes for over 24 hours, the only member of the delivery cohort to do so.

Zidovudine was given to all neonates. Zidovudine and Lamivudine were given to three babies. One neonate was given Zidovudine and Nevirapine. The infant with spontaneous rupture of membranes for over 24 hours received Zidovudine, Lamivudine and Nelfinavir. In two instances the neonate was given Zidovudine, Lamivudine and Nevirapine. HIV PCR results were unavailable for 3 babies. Twenty-five of the twenty-nine babies had a recorded negative HIV PCR at birth and the other 2 had a negative HIV PCR at 6 months. In total, there were 19 negative HIV PCR's at 6 months on record and the remainder had 8 negative HIV PCR's at 18 months.

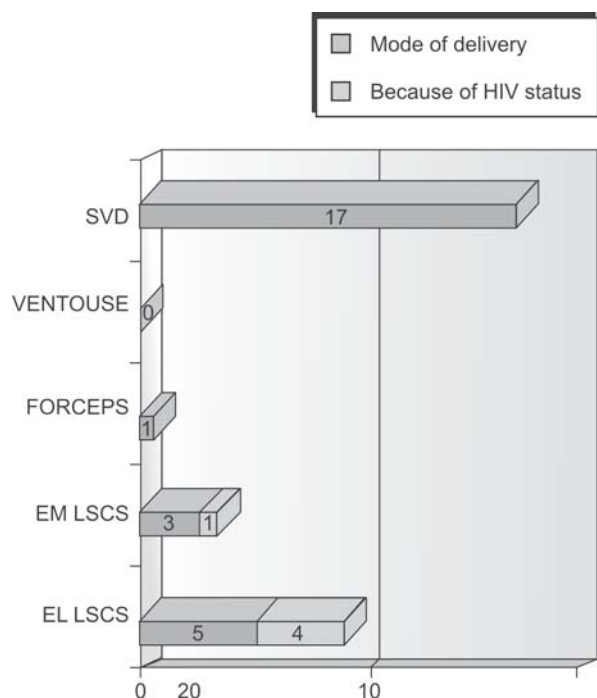


Fig. 3: Mode of delivery

Table 2: Duration of spontaneous rupture of membranes to delivery

Duration of spontaneous rupture of membranes to delivery	Numbers	HIV positive babies
<1 hour	4	0
1-6 hours	5	0
6-12 hours	4	0
12-24 hours	3	0
>24 hours	1	1

DISCUSSION

The incidence of mother to child transmission of HIV in developing nations is 25-30%. It is the aim of every obstetric unit to obtain the lowest possible transmission rate of HIV from the mother to the fetus. The use of HAART (Highly active antiretroviral therapy) from 28 weeks and the use of Zidovudine intravenously in labor has made this possible and also allows a vaginal delivery where the viral load is low.

The mode of delivery must be discussed with the patient with a multidisciplinary team being involved in her care. A counseling session informing the patient of the evidence and the current hospital statistics must be done with a plan for delivery to be made by at least 34 to 36 weeks. A prelabor cesarean section at 38-39 weeks must be discussed in the cases where women are coinfectd with Hepatitis C, where the viral load is greater than 50 copies per ml and when the women are only on Zidovudine monotherapy. In patients where the viral load is less than 50 copies per ml, the women should be counselled that there is insufficient evidence to support the

practice of a routine cesarean section, as the risk of transmission of HIV from the mother to the fetus is less than 1%.⁴

There is evidence to suggest that the use of HAART may result in preterm labor and patients must be counselled regarding the same.⁵ Though prematurity is a risk factor contributing to a greater chance of transmission of HIV to the fetus, the benefits of HAART therapy greatly out weight the ill effects of prematurity. Research by Chama et al⁶ has shown benefit using HAART reducing the transmission rate to 9.1%. Similar work by Boer et al⁷ where the transmission rate was 0% supports the continued use of HAART therapy.

In our study 54.8% of the women delivered vaginally of which none of the babies tested HIV positive. This emphasizes the fact that vaginal delivery can be and should be advocated where appropriate, and it is possible to achieve low levels of transmission of HIV.

Counseling plays an important role in the management of HIV positive mothers. It begins with pretest counseling and then counseling after a positive result. In known cases of HIV preconception, counseling is essential as patient must be aware of the transmission rates in that hospital and nearby facilities. Also, at this juncture it is essential to make the mother aware of other possible risk factors that may further increase the risk of her baby being infected. A sensitive, caring and nonjudgemental approach is essential. The mother must be made aware of the risk factors for mother to child transmission such a high viral load, coexistent infections, prematurity and, especially as was seen in this study, prolonged rupture of membranes. Poor education and resourses in the immigrant population make them vulnerable not only to booking late, being noncompliant with medication and not realising the need to present early in the event of rupture of membranes. Intensive counseling is essential such that the patients understand that prolonged rupture of membranes results in prolonged exposure to the virus, as the protective bag of membranes has been breached and that they must present early to the hospital in the event of rupture of membranes. This is crucial regardless of the viral load or being on oral antiretroviral treatment. In the single case in our study when the neonate tested positive for HIV, the mother presented to the hospital 24 hours after the onset of rupture of membranes. She subsequently had an emergency cesarean section as the viral load was high, but this special effort did not prevent the neonate from being infected. This circumstances highlights that better patient awareness is essential and that the false reassurance of being on antiretroviral drugs must be addressed.

Ruptures of membranes for a prolonged duration at term⁸ and in the preterm⁹ clearly contribute to an increased risk of transmission of HIV from the mother to the child. There is still insufficient evidence to guide the management of preterm rupture of membranes. As the only case of transmission of HIV was the case where there was rupture of membranes of greater than 24 hours, it cannot be more emphasized that patients must present immediately if there is a suspicion of rupture of membranes. When the rupture of membranes is confirmed, the mother must

be commenced on intravenous Zidovudine, and if a vaginal delivery was planned then oxytocin induction should commence; on the other hand, if a cesarean section was already planned, arrangements must be immediately made for the same.

In conclusion, our study supports that vaginal delivery should continue to be offered as a safe mode of delivery in cases with low viral load and where there are no obstetric contraindications. HAART therapy had greatly reduced the incidence of mother to child transmission of HIV. Better patient counseling and multidisciplinary care can help reduce the transmission rate to 0%.

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