Is Elective Caesarian Section Really Essential for Prevention of Mother to Child Transmission of HIV in the Era of Antiretroviral Therapy and Abstinence of Breast Feeding?

by Ira Shah

Department of Perinatal and Pediatric HIV Clinic, B. J. Wadia Hospital for Children, Parel, Mumbai, India

Summary

Aim: To determine whether vaginal delivery along with antiretroviral therapy and avoidance of breast feeding is safe in preventing mother to child transmission (MTCT) of HIV.

Setting: Pediatric & Perinatal HIV clinic, B.J. Wadia Hospital for children, Mumbai.

Study design: Retrospective analysis.

Methods and materials: 222 HIV-infected pregnant women were treated with zidovudine from 14 weeks of gestation onwards. 174 women underwent an elective caesarian section whereas 48 women delivered spontaneously vaginally. All infants were treated with zidovudine for 6 weeks and breast feeding was withheld. The HIV status of infants was determined at 18 months by ELISA test.

Results: Of the 174 infants delivered through LSCS delivery, two were HIV infected whereas 172 (98.9%) were HIV uninfected. Of the 48 infants delivered vaginally, 47 (97.9%) were HIV negative and one child was HIV infected. Thus, elective caesarean section was not statistically better as compared to vaginal delivery ($p = 0.8696$) suggesting that vaginal delivery was as effective as caesarean section for prevention of MTCT of HIV when added with antiretroviral therapy and no breast feeding.

Conclusion: Vaginal delivery along with antiretroviral therapy in mother and baby and avoidance of breast feeding is equivalent to that of an elective LSCS delivery for prevention of mother-to-child transmission of HIV. Surgical intervention may thus not be required in these women.

Introduction

Pediatric HIV is on the rise and perinatal transmission of HIV is the commonest mode of transmission of HIV infection in children [1]. Several studies have demonstrated a protective effect of elective caesarean section on reducing the risk for perinatal HIV transmission intrapartum [2–6].

In developing countries, very few hospitals have capacity to perform safe operative deliveries on such a large scale. Also caesarean section is invasive and an expensive procedure. At our center, since 1996 we have implemented a perinatal prevention programme called the Wadia protocol (modified PACTG-076) whereby all pregnant HIV infected women are given 500mg of AZT in divided doses from 14 weeks of gestation onwards. They undergo an elective LSCS delivery at 38 weeks of gestation (as calculated by last menstrual period and ultrasound) and their infants receive post natal AZT (8mg/kg/day in divided doses) for 6 weeks. Breast feeding is withheld. This has brought down the perinatal transmission rate to <2%. However, some women have spontaneous labor prior to the elective caesarean section date and undergo vaginal delivery.

We undertook this retrospective analysis to determine whether vaginal delivery along with antiretroviral therapy and avoidance of breast feeding is safe for prevention of MTCT of HIV.

Methods and Materials

This retrospective analysis was carried out for a period of 4 years from December 2000 to December 2003. 470 pregnant women infected with HIV were enrolled in the Wadia protocol after an informed consent and started on antenatal zidovudine on outpatient basis and followed up every 15 days. CD4 and HIV viral load was not done due to the cost. None of the patients received intrapartum intravenous zidovudine. These women delivered by an elective caesarean section at 38 weeks of gestation and delivery characteristics were noted. Vaginal delivery occurred in those who went into spontaneous labor prior to elective LSCS date. Babies received zidovudine for 6 weeks after birth. Breast feeding was withheld.
HIV ELISA test was done in these children at 18 months using 2 different ELISA kits (DETECT-MC and HIV CHeX). A definitive diagnosis of HIV infectivity was made if the infant tested positive on at least 2 occasions.

The data was analyzed whether vaginal delivery in these mother-infant pair on antiretroviral therapy and top feeds was as effective as elective LSCS delivery for prevention of MTCT of HIV by ANALYZE-IT software (version 1.7) using Chi Square test.

**Results**

124 mother-infants pair were lost to follow up post delivery and nine women had a still birth. 115 did not fulfill all the three arms of the study (antenatal zidovudine to mother or baby and no breast feeding) and were excluded from the analysis. Thus 222 mother-infant pair who fulfilled all the selection criteria were included in the study. The mean duration of AZT treatment in the pregnant women was 8.52 ± 5.04 weeks [95% CI = 7.815 to 9.238] with a median of 8 weeks [96.2% CI = 7.0 to 8.0 weeks]. 174 women (78.4%) had undergone an elective LSCS delivery whereas as 48 women (21.6%) had spontaneous vaginal delivery of which 1 patient required intervention with forceps. The mean birth of the babies was 2.580 ± 0.34 kg [95% CI = 2.54 to 2.63 kg]. 212 infants (95.5%) were a full term delivery whereas 10 infants (4.5%) were preterm babies. The male to female ratio was 1.2:1. At the end of 18 months of age, 219 infants were negative and 3 (1.4%) were HIV infected. Duration of maternal AZT, birth weight of the child, gender and gestational age had no difference on the transmission of HIV in the infant as depicted in Table 1. Of the 174 women who had an elective LSCS delivery, 172 had uninfected infants whereas 2 (1.1%) had an HIV infant. Of the 48 women with spontaneous vaginal delivery, 47 infants were uninfected whereas 1 (2.1%) had an infected infant suggesting that elective caesarean section had no statistical advantage over vaginal delivery in prevention of MTCT of HIV ($p = 0.8696$).

Six infants (2.7%) had diarrhea due to bottle feeding but none of them required any hospitalization. No patient died during the study.

**Discussion**

Clinical trials show that antiretroviral therapy, elective caesarean section and bottle feeds can significantly reduce the perinatal risk of transmission. However, there is a need to develop low cost strategies to prevent transmission of HIV from infected mother to her infant. Antiretroviral drugs decrease the risk of MTCT by reducing the viral load in the mother and by preventing the virus from fixing itself in the infant [1]. In our study, all pregnant women received antenatal zidovudine which is one of the prime factor in reducing the transmission risk.

Though the International Perinatal HIV Group has published a meta-analysis showing a significant reduction in vertical HIV transmission with elective caesarean section compared with other modes of delivery [5], a multicentric trial in Europe has found a significant lower rate of vertical transmission with elective caesarean section (1.8%) than those randomized to vaginal delivery (10.5%), but the decrease in transmission risk was not statistically significant among women receiving AZT prophylaxis [2]. Thus, it seems that elective LSCS with AZT prophylaxis does not seem to have any additional benefit as compared to vaginal delivery with AZT prophylaxis.

Similar inference can be gathered from our study where we find that elective LSCS in the background of AZT prophylaxis and no breast feeding does not seem to have an advantage over vaginal delivery. Among women without HIV-1 infection, caesarean section has been associated with increased neonatal morbidity, maternal morbidity and mortality as compared with non-surgical delivery [7]. Thus, the relative benefit of elective cesarean section with regards to mother-to-child transmission of HIV-1 along with possible risks associated with surgical delivery should be considered as a debatable issue.
Thus, one can consider vaginal delivery with antiretroviral therapy with AZT along with avoidance of breast feeding as a backbone of HIV transmission prevention program on a large scale.

References