

Profile of HIV Infected Pregnant Women and the Interventions Used in Prevention of Perinatal Transmission of HIV at a Tertiary HIV Care Center in South India

Purnima Madhivanan, Amudha Hari, N. Kumarasamy, A Geetha, Kausalya, John S Lambert, Suniti Solomon

Y R Gantole Center for AIDS Research and Education (YRG CARE), Chennai, India

Summary

A prospective study was done to document the profile of HIV positive pregnant women (HIV+PGW) and the interventions used to reduce mother to child transmission (MTCT) of HIV between June 1996 and October 1999 at YRG CARE. Forty-one HIV + PGW were followed up whose age ranged from 17 to 33 years. Thirty-six (88%) were housewives. Heterosexual contact was the main mode of transmission. Eleven (26.8%) women had lower genital tract infection, 6 (14.6%) had opportunistic infections. Five (12.1%) women chose to have MTP. Thirty-one (75.6%) consented to treatment with antiretroviral drugs (ART). To date, 19 (51%) women had delivered by the vaginal route and 13 (34%) by Caesarean section. Of those infants reviewed 18 months after delivery, 16 (55%) tested antibody negative and 5 (17%) antibody positive for HIV out of whom two have died. Eight infants (28%), out of whom one died before the status was known are awaiting confirmatory antibody test results. Voluntary HIV testing and counseling should be offered to all pregnant women. Efforts should be made to provide ART and safe alternatives to breast-feed to successfully interrupt MTCT of HIV in India.

Background

At the end of 1999, more than 33.4 million people were living with HIV. Half of these new infections were among women in their reproductive years (Joint UNAIDS report, 1999). The rate of MTCT of HIV is rising most rapidly in Asia, with India leading the pandemic (UNAIDS, 1999). Given the present rate of transmission, India will have the largest number of HIV positive individuals in the world by the end of the decade with more than five million. (Bollinger RC et al, 1995).

In India, heterosexual transmission is by far the most common route for contracting HIV. There is growing evidence of an alarming increase in the percentage of women (Gangakhedkar et al, 1997). The continued spread of the virus among married women of reproductive age presages a dramatic increase in HIV infected pregnant women during upcoming years. Perinatal transmission accounts for over 90% of these

infections in India (NACO, 1999).

In the absence of preventive measures, the risk of an infant acquiring the virus from an infected mother ranges from 14-33% in industrialized countries and 25%-43% in developing countries (Datta et al, 1994). The difference is due largely to the feeding practices with breast feeding being more common and usually practiced for a longer period in developing countries than in the industrialized world.

The AIDS clinical trial group (ACTG) protocol 076 study showed that Zidovudine (AZT) could reduce the MTCT of HIV by about 2, 3% in more developed countries from 27.7% to 7.9% (Connor et al 1994). Many similar trials have followed following the ACTG076 study. CDC sponsored Zidovudine trial in Thailand reported 50% efficacy in a non-breast feeding population (Shaffer et al, 1999). Thirty-seven percent efficacy of AZT was reported in a breast feeding population in Cote

d'Ivoiae (Witkor et al, 1999). HIVNET012 study results showed Nevirapine decreased transmission of HIV by 47.0% (Guay et al, 1999).

Data are limited on the safety of in utero fetal exposure to single or combination antiretroviral drugs (ART) given to the pregnant women. With all these intervention studies in the background, we report our experience with single and combination ART in a cohort of HIV-infected pregnant women.

Methodology

Study site and design: This prospective study was carried out at YRG CARE, a tertiary HIV care center in Chennai, India among 41 HIV+PGW, enrolled between June 1996 and October 1999. **Methods:** Information about MTCT and routine antenatal care was provided to every registered pregnant woman. All women received abdomen Ultrasonogram to diagnose foetal anomalies and approximate gestational age. They were offered ART according to the gestational age (Table I). ART regimens included AZT monotherapy in 26 cases (21 with modified 'ACTG076' & 5 with 'CDC-Thai' regimens), 5 received combination therapy (one with AZT/3TC & 4 AZT/3TC/NVP). All the women received prenatal vitamin supplements including Vitamin A, Selenium

and Zinc. Antiseptic vaginal lavage was given to mothers who delivered vaginally. Episiotomy and premature rupture of membranes were avoided. All the mothers were advised about infant feeding and risk of HIV transmission and choices left to the mother. Mothers and babies were advised to return for evaluation every 3 months.

Results

Forty-one HIV+PGW were followed. Five women (12%) chose MTPs, among whom 3 were commercial sex workers. Thirty-four of the 36 women were housewives with single sexual partner. Thirty-one (86%) individuals consented to treatment with ART (Table II). Seven (19%) did not return for follow up. To date, 16 women (59%) have delivered by the vaginal route and 13 (41%) by C/section, 8 were elective and 5 were emergency. All elective C/sections were done at 38-39 weeks of pregnancy. Only one infant was breast-fed. The average birth weight of the infants was 3 kgs. Of the infants reviewed 18 months after delivery, 16 (55%) tested antibody negative and 5 (17%) antibody positive for HIV. Out of the eight remaining infants, one died before the status was known, 7 are awaiting confirmatory antibody test results to be given at 18 months of age (Table III). Of the results known for 19 babies who are alive, 16 were negative which is a significant (84%) size.

Table I: Antiretroviral regimes and dosages used

Regime	Drug	Prepartum	Intrapartum	Post-partum	
				Woman	Child
Mod ACTG076	AZT	100mgs orally five times daily starting 28-34 wks gestation	300mgs every 3 hours during labor	No	2mg/kg BW PO every 6hr for 6 weeks
CDC/Thai	AZT	300mgs orally twice daily starting at 36wks gestation	300mgs every 3 hours during labor	No	No
Modified	AZT	300mgs orally twice daily starting at 36wks gestation	300mgs every 3 hours during labor	No	4mg/kg BW PO twice daily for 1
Combination	3TC	150mgs orally twice daily starting at 36 wks gestation	150mgs every 3 hours during labor	No	2mg/kg BW PO twice daily for 1 week
Modified	AZT	300mgs orally twice daily starting at 36 wks gestation	300mgs every 3 hours during labor	No	4mg/kg BW PO twice daily for 1 week
Combination With Nevirapine	3TC	150mgs orally twice daily starting at 36 wks gestation	150mgs every 3 hours during labor	No	2mg/kg BW PO twice daily for 1 wk
	NVP	No	200mgs orally at the onset of labour as a single dose	No	2mg/kg BW PO single dose within 72 hours of birth

Table II: Characteristics of the HIV infected pregnant women in the study who went on ART

Characteristics	Number (n)	Percentage (%)
Heterosexual transmission	31	100
Age group		
17-25	27	87.1
26-34	4	12.9
Gravida		
Prim	19	61.3
Multi	12	38.7
Occupation		
Housewives	29	93.5
Skilled workers	2	6.5
CD4 Counts (n = 12)		
< 200	1	8.3
201-350	2	16.7
351-500	4	33.3
> 501	5	41.7
Mode of delivery		
Vaginal	16	55.2
Caesarean	13	44.8
HTGII	9	29
HIV related illnesses		
Asymptomatic	25	80.6
Pul TB	3	9.7
Oropharyngeal candida	3	9.7
Herpes zoster	3	9.7
Infant feeding		
Breast feeding	1	3.4
Formula feeding	28	96.6

Table III: Status of the Infants

(N=29)	Alive	Dead	Total
Positive	3 (10.7%)	2 (66.7%)	5
Negative	16 (57%)	0	16
Unknown*	7	1	8

*All mothers who have delivered and whose babies' status is not known.

5 women had MFP, 7 were lost to follow-up.

Discussion

The transmission of HIV from an infected mother to her infant is estimated to be 15-40% in various developed and developing countries, with more than 2/3rd of the transmission probably occurring late in pregnancy or during labor and delivery (Bertolli et al, 1996). All these women at our center were referrals when they tested positive for HIV-1 antibodies during their routine antenatal checkup.

Eleven of the women who could afford to get their CD4 counts tested had a mean of 567 cells/mm³, implying that, at least at present, the pregnant women in our cohort have been recently infected. Thirty (73.2%)

of these women did not have any symptoms related to HIV disease, and for these women, monotherapy with a single drug to prevent MTCT of HIV may be satisfactory. There were 6 women who had HIV associated opportunistic infections in our study. This group of women, with more advanced disease, should be targeted for more aggressive therapy, perhaps with combination therapy administered during pregnancy.

The presence of lower genital tract infections (LGTIs) during pregnancy have been correlated with increase risk of transmission and LGTIs have been shown to increase viral shedding in cervicovaginal secretion (Ghys et al, 1997). One of the infants born to a mother with LGTI was positive for HIV antibodies and

the status of the other children are awaited. It is very important that these IGHs are diagnosed and treated during pregnancy, since such treatment may also decrease the risk of MTCT of HIV.

Many women in developing countries do not present for antenatal care in time to receive the ACTG076 regimen. Thus there continues to be a need to conduct studies that will be applicable to pregnant women in the developing world, including shorter courses of antiretroviral therapy during pregnancy. Five of the women in our study were offered short AZT regimen as it was more cost effective and had been reported to have reasonable efficacy. None of the infants had any adverse effects with the antiretroviral drugs.

Sixteen women had vaginal deliveries with care being taken to avoid prolonged labor and premature rupture of membranes. Both of these factors increase the chance of transmission (Minkoff et al, 1995). It is important that irrespective of the duration of labor, prolonged rupture of membranes must be avoided. Thirteen (45%) women delivered by C/Section out of which 8 had elective section. There is data showing a 50% reduction in transmission when C/section is performed as compared to vaginal delivery in non-breast feeding population. By combining the use of antiretroviral drugs, and elective C/Section, transmission rates had been brought down to as low as 2% in non-breast feeding population in the developed world (Mandelbrot et al, 1998). However, similar results (2% transmission) has been achieved just by ART treatment and obtaining an undetectable viral load at delivery, without the use of C/section. Five women underwent an emergency C/Section for maternal and fetal indications.

There has been significant data showing transmission of HIV through breast milk (Newell, 1998), and when suitable alternatives to breastfeeding are available, it is preferable to avoid breast-feeding. For women not to breast feed in India raises cultural issues and the women must answer to the whole family, and often her community - which again questions the confidentiality of the HIV status of the mothers. If a woman chose not to breast feed, efforts should be made to provide alternate methods available and care must be taken in training the mothers in hygienic preparation of the formula. Three out of the 5 babies tested positive have died because of the HIV related illness. Out of the results known for 19 babies who are alive, 16 were negative for

HIV. This could be due to the various interventions given through out the pregnancy.

Conclusion

This paper describes the various interventions done on HIV positive pregnant women to reduce the MTCT of HIV. The women in our cohort had HIV testing done during pregnancy and were referred to our center for treatment. Voluntary HIV counseling is critical part of identifying and treating HIV + PWG to reduce the MTCT of HIV. Routine testing should be offered to all pregnant women. Efforts should be made to provide ART to HIV infected pregnant women; and infant formula should be made available to their babies. Such a multifaceted strategy will reduce the MTCT of HIV and ensure that future generations of Indian children are born free of HIV.

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