

Evaluation of HIV-positive pregnancy in a tertiary-care referral hospital

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Abstract

Background: Mother-to-child transmission is the most significant source of infection in children younger than 15 years of age, which can be prevented through an effective package of prevention of parent-to-child transmission (PPTCT) services integrated with the existing reproductive and child health services.

Objective: To determine the seroprevalence and maternal and fetal outcomes in HIV-positive pregnancy.

Materials and Methods: This cross-sectional study was conducted in the Department of Obstetrics and Gynecology, NSCB Medical College and Hospital, Jabalpur, Madhya Pradesh, India, from the period of August 1, 2010, to October 31, 2011. All pregnant women who attended antenatal clinic and who came directly to labor ward were counseled for HIV testing. Informed written consent was obtained. The blood samples were collected and tested as per WHO and National AIDS Control Organization (NACO) guidelines. Spouses were counseled and tested. Babies were followed up till 18 months for HIV testing.

Result: Of the 5,332 antenatal registrations, 4,851 (91%) of them were counseled. About 4,804 (99%) consented for HIV testing. The number of women detected as HIV positive was 30. Seroprevalence in our study was 0.62%. The mean age in our study was 24.80 ± 3.22 years. A majority of them were primigravida [15 (50%)]. About 28 (93.3%) spouses were HIV positive and 24 (80%) of them were sexually promiscuous. Around 21 (70%) of them did not practice any contraceptive method. About 20 (87%) women delivered vaginally. Single-dose nevirapine prophylaxis was given to all mother-baby pairs. There were two maternal and two perinatal mortalities.

Conclusion: Married women in childbearing age group are a vulnerable category. The screening of pregnant women, testing, and counseling under PPTCT services through antenatal clinics allows the early identification of HIV infection and provides unique opportunity to implement preventive strategies against HIV infection in women, their infants, and children.

KEY WORDS: HIV, mother-to-child transmission, PPTCT, seroprevalence

Introduction

HIV infection is unique, because it affects the family, community, and the country. In India, the estimated number of people living with HIV is 2.1 million. Of these, women constitute

39%, with national antenatal prevalence of 0.48%.^[1] Mother-to-child transmission (MTCT) is responsible for 90% of infections in children younger than 15 years of age and accounts for 3.5% of the total infection load in India.^[2] It is also called as parent-to-child transmission to emphasize the role of fathers in both the transmission of virus and the management and care of mothers and their children.^[3]

HIV prevalence among adult population in India has declined consistently over the last decade from 0.4% in 2001 through 0.35% in 2006 to 0.27% in 2011. This decline reflects the impact of scaled up HIV prevention interventions under the National AIDS Control Program (NACP). On the contrary, reduction in new HIV infections among children is only about 35%, which indicates the continued and high level of transmission of HIV from infected mothers to their children.^[4]

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MTCT of HIV is a major route of infection in young children. It is estimated that the transmission risk is 25%–45% without any intervention.^[5] This transmission can occur during pregnancy, delivery, and breast feeding period with equal frequency.^[6] According to National AIDS Control Organization (NACO), it is estimated that with 27 million pregnancies per year and an overall estimated 0.3% prevalence rate of HIV among pregnant women, about 1 lakh HIV-infected women deliver every year in India, thereby increasing the pediatric infections. Fortunately, parent-to-child transmission of HIV can be prevented with a combination of antiretrovirals; safe delivery practices; infant feeding practices; and counseling and support to HIV-infected women, their infants, children, and families.^[4]

In order to achieve the goal in reducing the MTCT to zero prevalence, the Government of India and NACO started a common protocol throughout the country as Prevention of Parent-to-Child Transmission (PPTCT) Program in 2002 in all the medical colleges. Madhya Pradesh, being the central part of India, is a low-prevalence state with an antenatal prevalence of less than 1%; however, the land is surrounded by five high-prevalence states with lots of migration, varied socio-cultural constitution, and practices, which necessitates the awareness about seroprevalence in pregnancy, close monitoring, and the implementation of AIDS control program in this area.

Very few studies have been reported from this part of India regarding HIV infection in pregnancy. We, therefore, undertook this study with an aim to determine the seroprevalence and maternal and fetal outcomes in HIV-positive pregnancy.

Materials and Methods

This study was carried out in the Department of Obstetrics and Gynecology, NSCB Medical College and Hospital, Jabalpur, Madhya Pradesh, India, from August 1, 2010, to October 31, 2011. After the approval from the Institutional Ethical Committee, all the pregnant women attending antenatal clinic and those coming directly to labor ward were counseled for HIV testing. After obtaining informed written consent, their blood samples were collected and tested as per NACO guidelines. Three rapid tests based on three different antigen principles were subjected to the samples to report the HIV reactivity (WHO strategy III). Information on sociodemographic characteristics, reproductive history awareness of HIV, personal habits, blood transfusion, drug abuse, and contraceptive methods were gathered through a validated questionnaire. The results of the people who were found to be HIV positive were declared in posttest counseling under strict confidentiality. Disclosure issues, risk of MTCT, option for medical termination, and antiretroviral drugs (ART) were also discussed. Spouses of HIV-positive women were counseled and tested. Previous living children of the couples were also tested. All the women were followed up throughout the pregnancy with integrated antenatal services by an obstetrician

and a physician, counseled regarding the mode of delivery, and started on antiretrovirals for those who met eligibility criteria. Single-dose nevirapine (sdNvp) prophylaxis was given both to the mother (Tablet 200 mg at the onset of labor) and baby (syrup 2 mg/kg within 72 h of birth). The parents were counseled regarding the merits and demerits of breast feeding, while taking into consideration their social practices and socioeconomic status. Babies were subjected to dried blood spot (DBS) analysis at 6 weeks for early diagnosis, referred to Pediatric HIV clinic in our institution, and followed up till 18 months for final confirmatory HIV-antibody test. Mothers and babies were followed up.

Statistical Analysis

Data were entered in MS Excel Work sheet. All the illogical and inconsistency entries were resolved before analysis. All the categorical variables were presented at frequency counts, percentages, and continuous variables. They were summarized in mean \pm SD.

Result

The total antenatal registration was 5,332, Around 4,851 (91%) of them were counseled, of which 4,804 (99%) consented for testing. Thirty women were found to be seropositive for HIV-1 antibodies. Hence, the seroprevalence was 0.62%. Twenty-eight (93.3%) spouses were HIV positive. Seven (23.3%) previous children of the couples were HIV positive [Table 1]. All the women were married. A majority were in age group of 20–24 years, with a mean of 24.8 ± 3.22 years. A majority were primigravidae, from rural areas with low socioeconomic status, illiterate with minimal knowledge of HIV/MTCT, and housewives. Majority of spouses were unskilled workers and frequent migrants to other states. Twenty-one (70%) women did not practice any contraceptive method [Table 2]. The commonest high-risk factor was the promiscuity of spouses in 24 (80%) of them [Table 3]. Twenty (66.7%) women delivered vaginally [Table 4]. All mother–baby pairs received prophylactic sdNvp. Of 23 live births, 7 neonates were nonreactive on DBS testing, and 16 were in the process of testing. There were two maternal and two perinatal mortalities [Table 5].

Table 1: PPTCT services

Services in PPTCT clinic	N (%)
Antenatal registration	5,332 (50)
Counseled	4,851 (91)
Tested	4,804 (99)
Number of cases reactive	30 (0.6)
Number of spouses reactive	28 (98.3)
Number of previous children reactive	7 (39)
Mother–baby pair received nevirapine prophylaxis	23 (100)

Table 2: Profile of HIV-positive women

Profile	N (%)
Age (years)	
15–19	1 (3.3)
20–24	14 (46.7)
25–29	11 (36.7)
30–34	4 (13.3)
Gravida	
Primi	15 (50)
Multi	15 (50)
Locality	
Rural	24 (80)
Urban	6 (20)
Socioeconomic status	
Lower	20 (66.7)
Middle	3 (10)
High	7 (23.3)
Awareness	
Nil	16 (53.3)
Inadequate	12 (40)
Adequate	2 (6.6)
Education	
Illiterate	7 (23.3)
Primary level	8 (26.6)
Secondary level	12 (40)
Graduate	3 (10)
Occupation (wife)	
Housewife	24 (80)
Laborer	5 (16.7)
Service	1 (3.3)
Occupation (husband)	
Unskilled workers	13 (43.3)
Truckers	8 (26.6)
Service personnel	9 (30)
Contraception practice	
None	21 (70)
Barrier	6 (20)
Other	3 (10)

Table 3: Risk factors

Risk factor	Wife, N (%)	Husband, N (%)
Sexually promiscuous	3 (10)	24 (80)
Blood transfusion	5 (16.6)	4 (13.3)
History of STD	2 (6.6)	1 (3.3)

Discussion

HIV infection is unique, because it affects the family, community, and the country. Prevention of MTCT is of paramount

importance, as it is the significant source of infection in children younger than 15 years of age. To address the burden of HIV among children, NACP in line with WHO recommendations, caters PPTCT services through its four-pronged approach.^[1] It includes the primary prevention of HIV, especially among women of childbearing age^[2]; prevention of unintended pregnancies in HIV-infected women^[3]; prevention of HIV transmission from HIV-infected women to infants^[4]; and provision of care, treatment, and support to mothers living with HIV, their children, and families.

PPTCT services provide access to HIV testing to all pregnant women to know their HIV status, ART, safer obstetric practices, neonatal ART, and safer infant feeding practices, which are the core interventions of PPTCT services; these services render the potential to reduce MTCT to less than 2%.^[7]

PPTCT services algorithm is depicted in Table 1. During the study period, PPTCT services were provided to all the pregnant women, their spouses, infants, and children through PPTCT clinic established in Obstetrics and Gynecology Department. Although we aimed 100% counseling, we could achieve only 79% counseling, as it could not be done on Sundays and government holidays.^[8] “Opt-out” and “Opt-in” are the two common approaches to HIV testing. In opt-out approach, HIV testing is a standard part of routine antenatal care (ANC) component, and women have an option to refuse it. In opt-in approach, women are asked to undergo testing after a basic information of HIV is given during pretest counseling.^[6] We followed the opt-out approach in line with WHO and NACO guidelines^[9,10] [Table 1]. About 4,804 (99%) of them accepted testing. Parmeshwari *et al.*^[11] and Sebanti and Parthasarathi,^[12] in their studies, observed 100% and 94.2% testing, respectively.^[11,12]

We found 30 women reactive for HIV-1 antibodies with a seroprevalence of 0.62%. The same seroprevalence rates were observed in the studies carried out by Sebanti and Parthasarathi (0.63%),^[12] Mandal *et al.* (0.56%),^[13] and Dash *et al.* (0.66%).^[14] However, a low prevalence of 0.17% was observed by Sinha and Roy,^[15] of 0.35% by Joshi *et al.*,^[16] and of 0.17% by Snehamay *et al.*^[17] All spouses were consented for testing. Twenty-eight (93.3%) of them were found to be reactive. Ukey *et al.*^[18] reported similar results in their study.^[18] In our study, there were a total of 18 living children (aged more than one-and-a-half years) of 30 known cases, of which 7 (38%) were HIV positive (the profile of HIV-positive women is depicted in Table 2). Majority were in the age group 20–24 years. Similar results were reported in other studies.^[18,19] All were married. 15 (50%) were primigravidae and another 15 (50%) were multigravidae.^[20] Twenty (66.6%) women hailed from lower strata, 24 (80%) of them belonged to rural area, 14 (40%) of them were educated up to secondary level, and 53.3% showed no awareness regarding HIV/MTCT. Similar results were observed in the study carried out by Mathur *et al.*^[20] About 80% women were housewives and 43.3% husbands were unskilled workers and frequent migrant to other states. Migration enhances casual and commercial contacts because

Table 4: Course of pregnancy and mode of delivery

HIV-positive, N	HIV-negative delivered, N (%)	Antenatal, N (%)	Vaginal delivery, N (%)	Elective LSCS, N (%)	MTP, N (%)	Lost to follow-up from ANC, N (%)
30	23 (77)	2 (6.7)	20 (87)	3 (13.04)	3 (10)	2 (13.3)

ANC, antenatal clinic; MTP, medical termination of pregnancy.

Table 5: Follow-up (mother–baby)

Follow-up	N (%)
DBS	
Reactive	0
Nonreactive	7 (30.4)
Waiting	16 (70)
Mortality	
Mother	29 (91.3)
Baby (before 18 months)	2 (9)

of spousal separation and weak social control. About 70% of them did not practice any contraceptive method. The same results were observed in Ref. [14] [Table 2].

In our study, high-risk behavior was observed in the couples. In 24 (80%) cases, husbands were promiscuous, 3 (10%) women revealed multiple partners, and 5 (16.7%) women underwent blood transfusion in the past.^[12] About 6.6% of them showed history of sexually transmitted diseases. This conformed with other studies.^[12,14,17]

During the study period, 23 (86.9%) women delivered vaginally in our institution. About 13.1% cases underwent lower segment cesarean section owing to obstetric indications.^[11,18] All mothers and their newborns received sdNvp prophylaxis during labor as per NACO guidelines.^[17] Globally, evidences suggest that sdNvp is highly effective in reducing the risk of transmission from 45% to less than 10%. However, NACO guidelines 2013 have phased out nevirapine to mother at the onset of labor owing to the resistance development of resistance mutations. The WHO new guidelines 2013 recommends the use of more efficacious ART regimes with multiple drugs (tenofovir + lamivudine + efavirenz), which can potentially reduce transmission to less than 5% if started early in pregnancy and continued through the period of delivery and breast feeding.^[21,22]

In our study, 11 (36.7%) women were started on ART, as their CD4 count was less than 350 mm³.^[23]

Seven (30.4%) babies were subjected to DBS testing and were nonreactive (4 babies were in the age group 6 weeks–6 months, while 3 were in between 6 months and 1 year). Babies were followed up till 18 months for final confirmatory HIV antibody test by ELISA. We observed two maternal and two infant deaths during the follow-up period. Maternal deaths were owing to the advanced stage of the disease and tuberculosis, respectively. One newborn died within 3 days of birth owing to septicemia, and another died owing to pneumonia within 7 days of birth.

In our study, we found the Opt-out approach strategy quite feasible, as it enabled us to achieve 99% HIV testing. All HIV-positive women revealed institutional delivery. There was 100% coverage of mother–baby pairs with sdNvp prophylaxis. Establishment of ART center and availability of ART enabled majority of women to continue their pregnancy. DBS testing was a golden opportunity to find recent HIV infection in newborns.

Our aim was to achieve 100% counseling and testing, but owing to limited staffs of two (one counselor and one technician), government holidays, and Sundays, we could not reach to the targeted goal. Although we achieved 99% HIV testing, still we could not manage 47 women to undergo testing. In our study, two women lost to follow-up during antenatal period. We tried to trace them through different NGOs, but we could not find them on their address that they had registered in the records. We also found that none of the women showed a complete knowledge of HIV/MTCT. There was poor contraceptive usage. Therefore, health education and awareness campaigns on MTCT prevention need to be targeted on women in their antenatal period in order to increase acceptability and accessibility of these services.

Conclusion

Seroprevalence in our study (0.62%) was less than 1%. HIV infection was the highest among the age group 20–24 years. Lack of knowledge, low socioeconomic status, and promiscuous behavior of spouses were strongly associated with the HIV infection. There was 100% testing and sdNvp prophylaxis to mother–baby pair. PPTCT services are comprehensive, family-centered, clinical, and supportive services, which serve as the key entry point to early detection of HIV infection in pregnancy, thereby providing access to preventive strategies to reduce MTCT. PPTCT services integrated with existing maternal and child health services need to be implemented more stringently and meticulously to achieve zero prevalence.

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