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Original Research Paper

Medical Science

SEROPREVALENCE OF HIV AMONG ANTENATAL WOMEN AND IMPACT OF PREVENTION OF PARENT TO CHILD TRANSMISSION-AN EXPERIENCE OF 16 YEARS AT A TERTIARY CARE HOSPITAL IN DELHI

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ABSTRACT

INTRODUCTION: Estimating the seroprevalence of HIV in pregnant women assists efforts to scale up coverage of HIV testing and making interventions to minimize the risk of mother to child transmission .The rate of HIV transmission during pregnancy, labour or delivery in a seropositive women is 15%-45% with no interventions, but can be reduced to < 2 % with appropriate interventions.The aim of this study was to know the seroprevalence of HIV among antenatal women over 16 years (June 2003-May 2019) and the impact of PPTCT services in reducing disease transmission in newborn and infants.

MATERIALS AND METHODS: This retrospective study was conducted at Department of Obstetrics and Gynaecology in a tertiary care hospital of Delhi from June 2003 to May 2019.The data was collected from the antenatal records of women registered at the PPTCT Clinic as well as the list of infants undergoing Early Infant Diagnosis (EID) as per National AIDS Control Organization guidelines.

RESULTS: New ANC registrations recorded from June 2003 to May 2019 was 2,99, 985.Overall 34.2% of antenatal mothers received pretest counselling of which 98 % were tested. Among these 146 women tested HIV positive. The seroprevalence rate varied from 0.07% to 0.28 %. Among HIV positive women, partners were positive in 50%, 30.8% of partners tested negative and 19.1% were not available for testing. A total of (61.5%) of the babies were available for followup, of which (93.3%) were HIV negative. The lost to follow up rate was very high (36.5%). Only 3 (6.7%) babies were HIV positive .

CONCLUSION: The average seroprevalence rate of HIV infection amongst antenatal women was of 0.14%, which is lower than the national average of (0. 28%).However Pretest counselling and HIV testing needs to increase to cover every antenatal woman to strengthen PPTCT program.

KEYWORDS : Antenatal Women , Seroprevalence , Pptct, Antiretroviral Therapy

INTRODUCTION

The average HIV prevalence among women attending antenatal clinic in India is 0.28% as per NACO Sentinel Surveillance (2017) [1]. In 2010-2011 it was 0.48%. The prevalence of HIV infection among pregnant women in India is gradually decreasing. Estimating the HIV seroprevalence among pregnant women assists efforts to scale up coverage of HIV testing and counselling.

The NACO Technical Estimate Report (2015) estimated that out of 29 million annual pregnancies in India, 35,255 occur in HIV positive pregnant women. In the absence of any interv ention, an estimated 10,361 infected babies would be born annually. Parent to child transmission of HIV is a major route (90%) of new HIV infections in children.[2]Children acquire the infection, either during pregnancy, during labour, delivery or through breast feeding.[3] Without any intervention, the risk of MTCT (mother to child transmission) is estimated at 15%-45%.[4] Perinatal transmission accounts for 4% of total HIV infection load in India.[5] This is largely preventable with appropriate interventions, by providing Anti-Retroviral therapy (ART) to mothers and Anti-Retroviral (ARV) proph ylaxis to new-borns and infants.

The Prevention of Parent to Child transmission of HIV/AIDS (PPTCT) programme was launched in India in the year 2002. [3] The PPTCT programme aims to prevent the perinatal transmission of HIV from an HIV infected pregnant mother to her new-born baby. As per the PPTCT program of NACO, the HIV positive women received combination of Zidovudine, Nevirapine and Lamivudine for CD4 count less than 350/ml^3 or peripartum single dose nevirapine to mother baby pair when CD4 counts were more than 350/ml^{3}till 2013. This reduced the risk of MTCT to 16% in (breastfed) and 11% (with replacement feed) [6] There was a change in strategy due to concerns of resistance with Sd-Nevirapine.

With effect from Jan 2014, pregnant women who are HIV positive are initiated on lifelong ART (Tenovofir, Lamivudine and Efavirenz) irrespective of CD4 count and clinical staging; their new-born (HIV exposed) babies are initiated on 6 weeks of Syrup Nevirapine immediately after birth and is extended to 12 weeks if the duration of ART of mother is less than 24 weeks. The HIV exposed baby is initiated on cotrimoxazole prophylaxis at 6 weeks and is tested for HIV DNA PCR at 6 weeks by DBS (Dry blood spot) collection. If a DBS sample is positive for HIV DNA PCR, a repeat DBS sample is tested for HIV DNA PCR. If positive the HIV exposed baby is initiated on lifelong ART at the earliest.[6]

With the introduction of HAART (highly active antiretroviral therapy), the risk of MTCT is 2% with breast feeding and 1% with no breastfeeding. This has also been reported by Ngemu et al.[7]

The PPTCT program carried out at the Antenatal Clinic of our hospital includes group counselling followed by individual consent.HIV testing is offered with an "Opt out" approach. HIV testing is done using Rapid test kits provided by NACO.According to NACO policy, all three tests need to be positive to diagnose seropositivity. [8] Reports are available within 24 hours followed by post-test counselling for all women

who report for collecting reports. Pregnant women who test positive for HIV are advised pap smear, VDRL testing, referral to ART centre, TB centre and importance of institutional delivery, partner testing, neonatal antiretroviral prophylaxis, neonatal feeding options, neonatal follow up with DBS for Early Infant Diagnosis.

The aim of this study was to know the seroprevalence of HIV among antenatal women over 16 years and the impact of PPTCT services in reducing disease transmission in new-born and infants.

MATERIALS AND METHODS

The PPTCT program was launched in the year 2003 in our hospital. This retrospective study was conducted at a tertiary care hospital of Delhi, India.Data of 16 years from June 2003 to May 2019 was retrieved for retrospective analysis from hospital records.The demographic details along with the following performance indicators were assessed .

1. Number of new ANC (Antenatal Clinic) Registrations.
2. Number of pregnant women provided with Pretest counselling.
3. Number of Pregnant women tested for HIV.
4. Number of pregnant women detected to be HIV positive.
5. Number of partners of HIV women tested positive, negative and not tested.
6. Number of HIV positive women undergoing MTP, vaginal delivery,Cesarean Section.
7. Early infant diagnosis by DBS from 2010 as per NACO guidelines.

RESULTS

New ANC registrations recorded during the period of about 16 years from June 2003 to May 2019 was 2,99, 985.Overall 34.2% of antenatal mothers received pretest counselling of which 98 % were tested. Among these 146 women tested HIV positive.

Among HIV positive women, partners were positive in 50%, 30.8% of partners tested negative and 19.1% were not available for testing. Most of the HIV positive mothers (76.2%) had vaginal delivery. Caesarean Section accounted for (23. 7%).Only 3 HIV positive women opted for MTP. (fig-1)

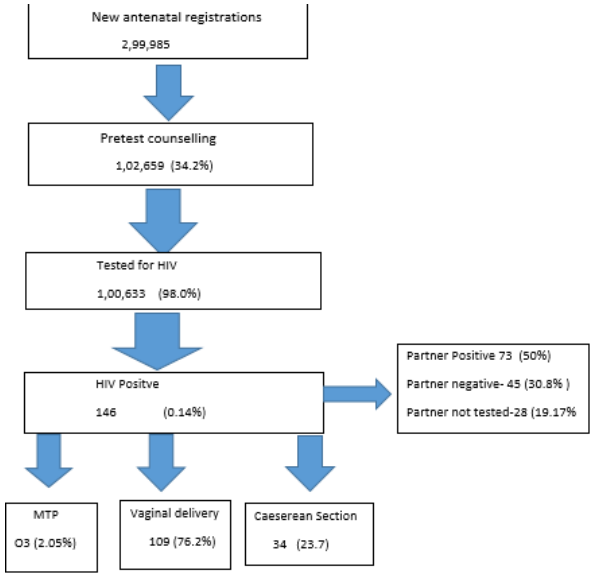

Figure 1: ANTENATAL DETAILS OF THE PPTCT PROGRAM (June-2003-May 2019)

The seroprevalence rate varied from 0.07% to 0.28 %. The average seroprevalence rate was 0.14 %. (Table 1)

Table 1: Year wise prevalence rate of HIV in antenatal wom en (June 2003* to May 2019)**

Year	New ANC Registration	Total number of Pretest counselling done		Total number of HIV testing done		Total HIV positive	Seroprevalance
	No.	No.	%	No.	%	No.	%
2003*	10,418	1761	(16.9)	1753	(99.5)	O5	0.28
2004	28,489	4810	(16.8)	4754	(98.3)	09	0.18
2005	30,975	5710	(18.4)	5509	(96.4)	07	0.12
2006	29,288	5836	(19.9)	5823	(99.7)	10	0.17
2007	24,293	6053	(24.9)	6028	(99.5)	13	0.21
2008	17,736	4813	(27.1)	4772	(99.1)	07	0.14
2009	16,004	6403	(40.0)	6197	(96.7)	13	0.20
2010	14,951	7957	(53.2)	7857	(98.7)	16	0.20
2011	17,130	8122	(47.4)	7938	(97.7)	12	0.15
2012	17,270	8885	(51.4)	8572	(96.4)	10	0.11
2013	17,314	9286	(53.6)	9136	(98.3)	07	0.07
2014	17,847	8612	(48.2)	8483	(98.5)	09	0.10
2015	14,998	8416	(56.1)	8116	(96.4)	09	0.11
2016	14,719	6537	(44.4)	6434	(98.4)	06	0.09
2017	14,023	4952	(35.3)	4823	(97.3)	09	0.16
2018**	14,530	4506	(31.0)	4438	(98.4)	05	0.11
Total	2,99,985	1,02,659	(34.2)	1,00,633	(98.0)	146	0.14

Majority of the HIV positive women (46.5 %) were found to be in the age group (25-34), followed by (44.5%)in the (20-24) age group. Teenage pregnancy group (15-19) was 6.16%. A total of (41.09%) were primigravidas. About 2.05% were gravida 5 and above. (fig-2 & 3).

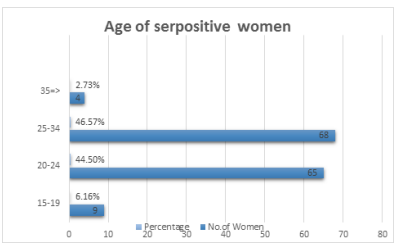

Figure 2: Age wise distribution of seropositive women

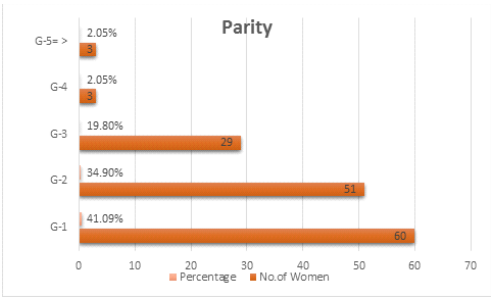

Figure 3: Distribution of Seropositive women according to parity

Data for Early infant diagnosis(EID) was available from 2010. A total of 48 (61.5%) of the babies were available for follow up with 30 (36.5%) being lost to follow up. A total of 93.3% of babies born to HIV positive mothers who were available for follow up were negative at 18 months. Only 3 (6.7%) babies were HIV positive by Early Infant diagnosis and referred for ART as soon as possible. (fig-4)

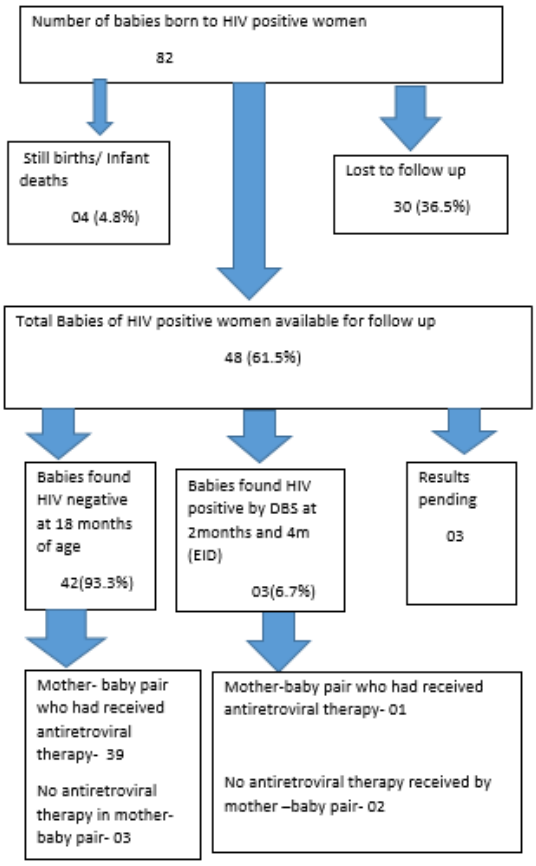

Figure 4: DETAILS OF BABIES BORN TO SEROPOSITIVE WOMEN , JAN 2010- MAY 2019.

DISCUSSION

The strategies involved in the PPTCT program have been one of the major successes in reducing the MTCT rates in India. A year wise analysis in the current study showed a gradual improvement of the PPTCT services over 16 years period. Antenatal coverage of PPTCT service has been reported to range from 52.4% [10] to 95%. [11,14]. In our study, the pretest counselling improved from 16.9% in 2003 to 56.1% in 2014. Later it showed a decline due to decrease in manpower and many antenatal women getting their HIV tests done in other ICTC centres prior to booking.

HIV testing by opt out approach was consistently above 96% in these 16 years. This is in accordance to studies by Param eshwari et al, Chaudhary et al; in which the acceptance of HIV testing by opt out approach was 100% and 96% respectively. [13,14] This is due to sustained efforts of awareness building, by medical and paramedical workers in antenatal clinics and good HIV counselling and regular training of counsellors.

According to HIV Sentinel Surveillance NACO 2017, [1] the national average seroprevalence in antenatal attendees was 0.28.The average seroprevalence in our study was 0.14%. The HIV prevalence observed in this study ranged from 0.07% to 0.28%. Different authors have reported different seropositivity rates, ranging from 0.16% to 0.88%. [12,14]

Majority of the HIV positive women (46.5%) were from the age group of 25-34. Age group 20-24 contributed to (44. 5%). Similar findings have been reported in other studies. [12,18] Most of them (41.09%) were primigravidas. Present observation is consistent with study done by Dash etal and Patil etal [15,16]

Involvement of the male partner is a crucial component for the successful implementation of PPTCT programme. In the initial years, participation of partners remained low. Hence testing was insisted for seropositive women after proper counselling. Partners reported positive in 50% of HIV positive women, negative in 30.8% of cases and 19.1% were not available for testing. The main route of transmission of infection was heterosexual contact. This is in accordance to study by Malik et al [17] where 44% of partners were seropositive.

Among the seropositive women delivered, average vaginal delivery and caesarean section rates were76.2% and 23.7% respectively. In the initial years when single dose nevirapine was used for mother child pair, the Caesarean section rates were high but with the use of HAART strategies caesarean sections were done only for obstetric indications. Other studies have mentioned vaginal delivery rates of 46% to 66%. [18,19,20]

The PPTCT program launched early infant diagnosis (EID) of HIV among HIV-exposed infants and children under 18 months of age in 2010.Data for follow up of infants was available from 2010 onwards. Among the babies available for follow up, (93.3%) were HIV negative at 18 months. . A major limitation of our study is the high lost to follow up infants, which was about (36.5%). Other studies from India have also reported high lost to follow up rates ranging from 29% to 67.8%. [20,21,22]

Although 6.7% babies tested HIV positive, true seropositivity among infants could not be derived due to a high rate of lost to follow up. Some studies have reported a seropositivity rate ranging from 3.6% to 15%. [11,18,23]

The use of ART remains the cornerstone of PPTCT interventions to reduce MTCT rates. Adherence to ART regimens is a major challenge among HIV positive antenatal women. Another limitation of our study is the lack of data on measurement of ART adherence.

CONCLUSION

This study highlights the weaknesses and strengths of the PPTCT programme's journey of 16 years. While progress is being made in reducing HIV transmission and promoting ART coverage, more efforts are needed to reduce new infections and mortality in children. Increasing awareness about prevention of parent to child transmission services, increasing pretest counselling to cover every antenatal women, adher ence to ART by the mother in more than 95% is crucial for the successful prevention of mother-to-child transmission of HIV.Closely monitoring antiretroviral therapy adherence among children, improving the follow up of all infants exposed to HIV by a tracking system ,early diagnosis and initiation of

ART in children less than 2 years of age are some of the challenges which needs to be addressed to control Paediatric HIV infection.

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CONFLICT OF INTEREST: None

ETHICAL APPROVAL: Not required

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