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Pregnancy Outcomes in HIV-Infected Women: Our Experience at a Tertiary Health-Care Center, Ahmedabad, Western India

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Abstract

Background:

HIV prevalence has been increasing among pregnant women in many regions within the country. Illiteracy, early marriage, violence and sexual abuse against women are the major socioeconomic reasons for their vulnerability to HIV infection. Estimating the HIV seroprevalence in a low risk population such as pregnant women provide essential information for monitoring trend of HIV in general population and assist in prevention from mother to child transmission.

Methods:

This study is a retrospective computer based data analysis, conducted at Sheth V.S. General and Sheth C.M. Hospital, Smt. N.H.L Municipal Medical College, Ahmedabad, a tertiary health care center in Gujarat, India between January 2012 to December 2019.

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This study includes 68330 pregnant women who attended antenatal clinic or directly admitted in labor room in emergency. Blood sample collected after pretest counselling and informed consent, tested for HIV antibodies as per NACO guidelines. HIV sero-positive mothers and babies were managed at ART center of our institute according to latest guidelines of the same.

Results:

Out of 68330 pregnant women, 166 found to be HIV-positive with seroprevalence rate of 0.24%. Majority of seropositive women (49.4%) were in the age group of 25-30 Years. Out of 150 live births, 3 babies were found to be HIV sero-positive result at 18 months and were managed with ART according to latest NACO guidelines.

Conclusions:

Mother to child transmission of HIV infection during pregnancy, delivery or breast feeding is responsible for more than 90% of pediatrics AIDS. Proper antenatal screening, interventions and preventive strategies during pregnancy, delivery and breastfeeding will bring down the mother to child transmission of HIV. A multidisplinary team approach to management involving an HIV physician, experienced obstetrician, and neonatologist are essential to optimize maternal and fetal outcome.

Keywords: HIV; Pregnant women; Seroprevalence; neonatal outcome.

1. Introduction

The first AIDS case was detected in India in 1986 and since then HIV infection has been reported in all states and union territories. India launched a National AIDS Control Program in 1987. Six Indian states are considered to have high HIV-AIDS prevalence (>1%) are Manipur, Nagaland, Andhra Pradesh, Tamil Nadu, Karnataka and Maharashtra. The prevalence of HIV infection among pregnant women in India is coming down and current prevalence is around 0.7% but still India is the top 10 countries with high prevalence of HIV among pregnant women and third largest country in HIV epidemic. HIV prevalence has been increasing among pregnant women in many regions within the country. Illiteracy, early marriage, violence and sexual abuse against women are the major socioeconomic reasons for their vulnerability to HIV infection. 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 intervention an estimated (2015) cohort of 10,361 infected babies will be born annually which emphasizes screening for HIV in pregnant women and proper implementation of PPTCT programme. Screening in antenatal women is important, because HIV can be transmitted from an infected mother to her child during pregnancy, labour and delivery and through breast feeding. Reported transmission rates ranged from 13-32% in industrialized countries and 25-48% in developing countries [1]. In breast feeding infants up to 20% may acquire HIV through breast feeding depending on the duration of breast feeding and other risk factors such as presence of mastitis, breast abscess and other local factors [2]. In children less than 15 years mother to child transmission is by far the most significant rout of transmission of HIV infection [3]. While heterosexual contact is the commonest mode of spread in this country, perinatal transmission accounts for 4% of total HIV infection load in India [4]. Mother to child transmission of HIV infection during pregnancy, delivery

or breast feeding is responsible for more than 90% of pediatric AIDS. As the HIV positive women in India are increasing in number, consequently the number of babies acquiring infection in the prenatal period is also expected to increase if the infection goes undetected during pregnancy. There for screening at an early stage of pregnancy may help in prompt counseling and thereby reducing the risk of perinatal transmission. Estimating the seroprevalence of HIV in a low risk population such as pregnant women provides essential information for an effective implementation of AIDS control program, to predict the seroprevalence in young children and also for the monitoring of HIV spread within our country. This study was done to determine the seroprevalence of HIV in pregnant women attending antenatal clinic at Sheth V.S. General and Sheth C.M. Hospital, Ahmedabad, Gujarat, India.

2. Material and Methods

This is a retrospective hospital based descriptive study which included 68330 pregnant women who attended antenatal clinic (65284) or directly admitted in labor room in emergency (3046) of Sheth V.S. General and Sheth C.M. Hospital, Ahmedabad, Gujarat, India, from January 2012 to December 2019. Pregnant women registered at antenatal clinic of this hospital were routinely advised to undergo HIV screening. Blood sample was collected after pretest counseling and informed consent. The sample was tested for HIV antibodies as per NACO (National AIDS Control Organization, India) guidelines-2012. Every pregnant woman, with routine antenatal profile tested for HIV Rapid (Combis Test) kit supplied by NACO. If first test is negative then woman is considered as sero-negative for HIV. But if the test is positive then it is followed by 2 confirmatory tests and considered as sero-positive for HIV. After the HIV test result is known, posttest counseling is done and the result is declared and husband/spouse is counselled and tested.

3. Results

Table 1: HIV Testing and Results of Antenatal Mothers attending our Ob/Gyn OPD From 2012-2019

Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**Total**
Antenatal Tested	5558	4071	8599	9394	9847	10926	10597	6292	65284
Labor Room Tested	555	246	348	386	488	313	403	307	3046
ANC+ LR Positive (New)	19	15	8	7	8	10	7	11	85
Already Positive (Old)	0	0	8	11	11	18	9	24	81
Total Positive (New+ Old)	19	15	16	18	19	28	16	35	166
Spouse Test									
Positive	10	14	6	6	6	7	2	7	58
Negative	9	1	2	1	2	3	5	4	27

All positive antenatal patients were referred to ART center in Medicine department of our institute and started the regimen- Tenofovir, Lamivudine and Efavirenz (TLE), guided and sponsored by NACO. Confidentiality of data was maintained at all the time. Proper antenatal care is given. Hospital delivery is advised for them following universal precaution. Data about socio-demographic variables, obstetric history, pregnancy and baby outcome were analyzed. Babies of HIV sero-positive mothers were given syrup Nevirapine immediately after birth and then followed according to NACO guidelines.

Table 2: Demographic Profile of HIV sero-positive Mothers (n-166)

Age (Years)	**15-19**	06
	20-24	62
	25-30	82
	30-34	14
	>35	02
Literacy	**Illiterate**	46
	Primary Education	62
	Secondary Education	42
	Higher education	16
Locality	**Urban**	98
	Rural	68
Socio-Economic Class (Modified Kuppuswamy scale)	**Upper**	6
	Upper Middle	13
	Lower Middle	32
	Upper Lower	36
	Lower	79

Table 3: Obstetric Profile of HIV Sero-positive Mothers (n-166)

Gravida	**Primi**	72
	Second	51
	Multi	43
Trimester	**First**	42
	Second	66
	Third	58

Numbers of pregnant women included in the study were 68330. Majority of pregnant women tested for HIV were in the age group of 20-30 years (Table 1). Among all the seropositive pregnant women, 27.7% were illiterate. Majority of the seropositive women were primigravida (43.3%) followed by second gravida (30.7%) and third gravid or more (25.9%) (Table 2). Out of 68330antenatal patients,166 were found to be positive

accounting for seroprevalence rate of 0.24%. Majority of the HIV positive pregnant women (49.3%) were in the age group of 25-30 years followed by 20- 24 years (37.3%). (Table 2). The order of birth among seropositive pregnant women are depicted in Table 3.Seropositivity rate was higher among urban localities accounting for 59.0% compared to rural pregnant women. Education status among the seropositive pregnant women showed that 37.3% had secondary education and 27.7% were illiterate.

Table 4: Pregnancy outcome of HIV Sero-positive Mothers (n-166)

Delivery	**Live Birth**	150
	MTP/Abortion	14
Mode of delivery	**Cesarean**	72
	Normal	78
Maternal Mortality (During antenatal period/HIV+ TB+ HBsAg)		2

Present study shows that there is not much difference in the mode of delivery between cesarean and normal vaginal delivery- (48% and 52% respectively). M (Spontaneous/Induced) rate was found to be 8.4%. (Table 4) 2 Maternal deaths – due to complication of tuberculosis was there. (Table 4)

Table 5: Baby Outcome of HIV Sero-positive mothers

Total babies tested at 18 months- (n-148)	
HIV Positive	3
HIV Negative	145
Baby Death-	
Before HIV Serology Test (Before 6 Months)	2
After HIV Serology Test	0
Nevirapine syrup given immediately after Birth	150
Started Anti-Retroviral Therapy	3

Total babies tested for HIV sero test were 148, out of which 3 (2.0%) were sero-positive for HIV. All 3 of them were started on anti-retroviral therapy. Nevirapine syrup was given to all the live born babies (150).

4. Discussion

India's socio-economic status, traditional social ills, cultural myths on sexuality and a huge population ofmarginalized people make it extremely vulnerable to HIV/AIDS [5]. Since the first case reported in 1986 in Chennai in South India, HIV had spread rapidly from urban to rural areas and from high-risk groups to the general population [6]. In a country of over one billion population and 5.2 million HIV positive adults in the age

group of 15-49 years, India is now faced with multiple HIV epidemics [7]. Heterosexual contact remains the major mode of transmission, thereby resulting in a growing population of HIV infected women (38% in the year 2005) [8]. The parent to child transmission occurs in approximately 25% to 35% of HIV infection load in India [4]. In the present study, 68330 pregnant women screened for HIV after pretest counseling and informed consent, prevalence rate of HIV was found to be 0.24%. The average HIV prevalence among women attending antenatal clinic in India is 0.48% as per NACO annual report 2010-2011 Mandel and his colleagues from West Bengal observed the seroprevalence rate of 0.56% which is comparable to our study [9]. Similarly Studies done by Giri and his colleagues from Loni, Maharashtra; Devi and his colleagues from Renga Reddy district, AP and Patil and his colleagues in Dhule, Maharashtra observed the prevalence of HIV as 0.41%, 0.45% and 0.44% respectively [10-12]. Different authors have reported different seropositivity rates, ranging from 0.16 % to 0.88%. The figures vary widely between the various states of India. Parmeshwari and his colleagues from Namakkal District, Tamil Nadu; Kulkarni and his colleagues from Nanded, Maharashtra and Nagdeo and his colleagues (2007) from Hingna, Nagpur, Maharashtra reported seroprevalence rate of 0.70%, 76% and 0.72% respectively [13-15]. Both the studies done by Gupta and his colleagues in North India and Sarkate and his colleagues in Maharashtra revealed the seroprevalence rate of 0.88% among pregnant women [16,17]. Studies conducted by Khokar and his colleagues in a tertiary care hospital in Gujurat and Farhana Aljabri and his colleagues in a tertiary care hospital in South India observed the prevalence rate of HIV as 0.39% and 0.27% respectively [18,19]. Chaudhuri and his colleagues in Kolkata, WB reported low prevalence rate of o.17%.20 Recently studies done by Preethkanwal and his colleagues in Punjab and Sayare and his colleagues in Akola, Maharashtra revealed prevalence rate of 1.03% showing higher prevalence in those areas [21,22] In our study out of total 166 HIV-positive pregnant women 82(49.4%) were in the age group of 25 to 30 years, followed by 62 (37.3%) in the age group of 20-24 years. Giri and his colleagues found in their study of the total 50 HIV positive women [17] (34%) were aged 18-23 years, 21 (42%) aged 24-28 years [10]. Similarly a recent study done by Sayare and his colleagues (2016), Akola, Maharashtra revealed that the maximum no of client tested positive were in the age group of 20-29 years comprising of 77.8% [22]. A study carried out in western India by Ukey and his colleagues in 2003-2004 reported that the most affected age group was 18-24 years [23]. It indicates the prevalence was high among newly sexually active pregnant women. Young women are more vulnerable to HIV epidemic and the virus is more easily passed to young women because of their immature vaginal tractand easily torn tissue; mean while gender inequities in many countries prevent safer sexual practice including condom use. In our study, we found only 2 women aged more than 35 years, who were tested for HIV over a period of 6 months. In our study among the seropositive women 27.7% were illiterate and 62.7 % were educated up to secondary level. The possible reasons of high prevalence in lower education level could be their ignorance about HIV infection and its mode of transmission, because they belong to low socioeconomic status whose husbands migrate to other states for work, contract the infection there and then infect their wives, low access to health care facility and higher rates promiscuous activities of their husbands. Among HIV-positive pregnant women in the present study majority 72 (43.3%) were primi gravid as comparable to the study done by Patil and his colleagues where majority (53.83%) were primigravida and 46.2% were multigravida [12]. In our study it is possible that these women were infected in past but were detected during this study period, when HIV testing for these women were made available. Ashtagi and his colleagues in their study observed that among the HIVpositive pregnant women attending ANC clinic 63.83% were multigravida and 36.17% were primigravida

[24]. The spread of HIV occur in various ways including through the clients of sex workers and "bridge population" the most important of which appear to be long distance trucker and men who migrate between states for seasonal work, in construction and other industries [25]. In our study 47.3% seropositive pregnant women husbands were migrants and 25%.Truckers and migrants may become infected while away and infect their wives when they return home. It is not socially appropriate for wife to discuss using condoms with her husband. She is not able to negotiate safe sex..This study was conducted over a period of 6 months including 68330 pregnant women. Among them 166 women were found to be positive for HIV infection accounting for seroprevalence rate of 0.24%. Majority were in the age group of 25-30 years, with higher reproductive history and in illiterates. The HIV seroprevalence rate among pregnant women in Gujarat is 0.39% and the average seroprevalence among women attending antenatal clinic in India is 0.48%. (As per NACO Annual report 2010-2011. Even though our study population is not representative of whole India because of ours is a hospital-based study with limited sample size. Rise in seroprevalence among pregnant women will directly transform into high prenatal transmission and reciprocal increase in pediatric AIDS cases. Mother to child transmission of HIV infection during pregnancy, delivery or breast feeding is responsible for more than 90% of paediatrics AIDS. Appropriate antenatal screening, intervention and preventive strategies during pregnancy, delivery and breastfeeding will bring down the mother to child transmission of HIV. There for it may be recommended that every pregnant women should be screened for HIV after pretest counseling and obtaining informed consent, even though curative treatment is not available at present we can minimize, if not prevent the pediatric infection by early screening followed by short chemotherapy, safe delivery and modified infant feeding.

5. Conclusion

Perinatal transmission of HIV infection occurs in absence of any interventions. The benefits of Anti-retroviral Treatment (ART) in decreasing mother to child transmission (MTCT) of HIV infection are largely undisputed. Keeping in view the data from published literature and the present study, we have to counsel that they maybe at increased risk of an adverse outcome like pulmonary tuberculosis, IUGR and anemia, which may be due to disease or ART. Medical service providers need to understand this while taking care of HIV-infected pregnant woman. A multidisplinary team approach to management involving an HIV physician, experienced obstetrician, and neonatologist are essential to optimize maternal and fetal outcome.

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6. Declarations

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7. Limitations

Many mothers were from remote rural areas of the hospital and city. So longterm followup was not adequate.

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