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Original Research Article

A study on seroprevalence of HIV among women attending obstetric care in a tertiary care hospital of South India with maternal and perinatal outcomes

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ABSTRACT

Background: HIV is prevalent in epidemic proportions in India. Identifying the target population and effective intervention reduces chances of vertical transmission and new infection. Authors studied the seroprevalence of HIV among women attending obstetric care in a tertiary care hospital of South India and associated maternal and perinatal outcomes among seropositive women.

Methods: Retrospective descriptive study of all women who were screened for HIV at Integrated Counselling and Testing Centre, Vani Vilas hospital, from January 2014 to December 2017 in their antenatal, intranatal and postnatal period. Demographic data of seropositive women, obstetric outcomes and status of children at 18 months were obtained.

Results: Of the 35,455 women who were screened, 0.28% were found positive for HIV. Percentage prevalence of HIV was highest in 2014 (0.32%). Majority of the seroprevalence belonged to age group of 25-29 years (44%), 32% illiterates, 82% homemakers and 79% belonged to urban areas. Unknown partner status in 22% and majority were diagnosed in antenatal period (66%). Of them 82% had favourable CD4 count. 74% of them delivered live baby. Three maternal deaths were observed and anaemia (65%) was the major associated co-morbidity. Vaginal route was common mode of delivery (84%). Thirteen babies required NICU admission and 6 neonates deaths were encountered. Exclusive breastfeeding was practised in 91% of live births. 62% of children were found seronegative at 18 months follow up.

Conclusions: Authors observed with adequate treatment to mother and prophylaxis to the baby, the burden of vertical transmission can be significantly reduced.

Keywords: Human immunodeficiency virus, Obstetric outcomes, Seroprevalence

INTRODUCTION

It has been estimated that 2.1 million people are living with HIV in India. Its prevalence being 0.27%. Of these 39% are women and 7% are children aged <15 years.¹ Approximately about 49000 of women infected with HIV conceive every year and subsequently deliver with or

without proper prophylaxis to prevent vertical transmission.^{2,3}

It is known from various studies that the mother to child transmission of HIV is a major route of infection among children. The incidence, prevalence along with the burden of the disease can be substantially curtailed by

proper care and treatment during pregnancy and delivery. As pregnancy itself increases the chances of progression of the disease, proper treatment to the mother helps in improving her health. The linchpin in achieving this goal is by identifying the target population. Since many of the patients infected with HIV are asymptomatic, adoption of universal counselling and screening helps in identifying the target population.

A child can acquire HIV infection from its mother during pregnancy, labour/delivery and during breast feeding. Without any proper intervention/treatment, the risk of transmission from infected women to her child is estimated to be around 20-45%. After proper intervention and use of ART (anti retroviral therapy) in its proper dosage and duration, the chances of vertical transmission can be reduced to 10%.¹

Three drug regimen including, Tenofovir + Lamivudine + Efavirenz to all pregnant women irrespective of CD4 count and WHO stage as directed by NACO is currently practised in India. Antiretroviral prophylaxis with Nevirapine to all infants from birth upto a minimum period of 6 weeks is indicated.¹

To the best our knowledge, this is one of the largest study on the seroprevalence of HIV among women attending obstetric care in a tertiary care hospital of South India with maternal and perinatal outcomes. Apart from the demographics, present study also reflects the impact of three drug regimen suggested by NACO (National AIDS Control Organisation) on vertical transmission.

METHODS

This is a retrospective descriptive study of all women who were screened for HIV at ICTC (Integrated Counselling and Testing Centre), Vani Vilas hospital, from January 2014 to December 2017 in their antenatal, natal and postnatal period.

All the pregnant women attending the antenatal clinic of Vani Vilas hospital were counselled on the importance of screening for HIV with an opt out strategy. Blood sample was collected from the pregnant woman who consented for the test. Rapid tests were performed including triline, tridot and ELISA and the patients who were found positive were subsequently counselled. Confidentiality of the data was maintained at all time. The patient was advised on proper antenatal care, ART regimen and treatment, hospital delivery, universal precautions and neonatal prophylaxis including complimentary feeding.

Those who presented without the test in labour, or post delivery were also tested, the reports confirmed later and referred to ICTC for further advice.

In present study, authors included all the screened women who were found seropositive for HIV in their antenatal, natal and postnatal period. Various demographic data

from those who were found seropositive was collected. The details of events during antenatal, intranatal and post natal period, the perinatal outcome was also noted. Data was subsequently analyzed in Microsoft excel along with calculation of relative percentages.

RESULTS

A total of 35,455 women were screened. Of these 101 were found seropositive for HIV with a percentage prevalence of 0.28%. There was a declining trend in the number of women who underwent universal screening for HIV from 2014 to 2017. Percentage prevalence of HIV was highest in the year 2014 (0.32%) and least in the year 2016 (0.22%).

Table 1: General demographic factors of seropositive pregnant women.

Characters	No. of seropositive pregnant women	Percentage
Age distribution		
15- 19 yrs	5	5
20- 24 yrs	37	37
25- 29 yrs	45	44
30- 34	10	10
35- 39	3	3
>40	1	1
Total	101	100
Educational qualification		
Illiterate	33	32
Primary	16	16
Secondary	20	20
Higher secondary	17	17
College and above	15	15
	101	100
Occupation		
Homemaker	83	82
Agricultural laborer	3	3
Non-agricultural laborer	12	12
Skilled labor	3	3
	101	100
Geographical distribution		
Rural	21	21
Urban	80	79
	101	100

Among the women who were found to be seropositive for HIV, a majority of them belonged to age group of 25-29 years (44%) with mean age being 25.32 years (Table 1). 32% of seropositive women were illiterates (Table 1) and homemakers (82%) (Table 1). Also, majority of these women belonged to urban areas (79%) (Table 1).

There was relatively slightly higher prevalence of seropositive status among multigravida (55%). Partner status was unknown in 22%. Majority of the who were

found seropositive were in antenatal period (66%) (Table 2).

Table 2: Obstetric demographic factors of seropositive pregnant women.

Order of pregnancy		
Primigravida	45	45
Multigravida	56	55
	101	100
Partner positivity status		
Positive	40	40
Negative	39	38
Not known	22	22
	101	100
Stage of detection of seropositivity		
Prenatal	1	1
Anc	67	66
Labor	28	28
Post natal	5	5
	101	100

In present study 82% of seropositive women had favourable CD4 count of >250/cu mm. Also 74 % of seropositive delivered live baby. Various other pregnancy outcomes are described in details in Table 3.

Table 3: Pregnancy outcome among seropositive women.

Pregnancy outcome	No. of subjects	Percentage
Abortion	14	14
Ectopic pregnancy	3	3
Live birth	75	74
Stillbirth	5	5
Maternal mortality	1	1
Ongoing pregnancy	3	3
Total	101	100

In present study, the predominant mode of delivery was vaginal route among seropositive women (84%). Three maternal deaths were observed during our study period with 2 in the post natal period and 1 in the antenatal period.

Table 4: Pregnancy associated major co-morbidities among seropositive women who delivered.

Co-morbidities associated with pregnancy	No. of subjects
Hypertension	6
Eclampsia	1
Gdm	4
Anaemia	55
Placenta previa	1
Abruption	1

Pregnancy associated major co-morbidities were noted in 68 of 84women who delivered (81%). Anaemia was the

major associated co-morbidity noted in 55 seropositive women. Various other associated co-morbidities are as described in Table 4.

Table 5: Causes of NICU admission.

Causes of NICU admission	Number of neonates
Respiratory distress	6
Preterm care	4
Sepsis	2
Congenital anomaly	1
Total	13

Of the 75 live birth, 13 babies necessitated NICU admission (17%) with respiratory distress being the main cause for NICU admission (Table 5). There were 6 neonatal deaths and 4 of them died in early neonatal period.

Table 6: Child status at 18 months of age.

Child status at 18 months	No. of children	Percentage
Seropositive	2	3
Seronegative	46	62
Death	6	7
Not known	9	12
Ongoing screening	12	16
	75	100

Exclusive breastfeeding was practised in 91% of live births among seropositive women. With this background 62% of children were found seronegative when screened for HIV at 18 months of age. Status of the children at 18 months follow up is as described in Table 6.

Table 7: Educational status among women seeking MTP.

Education among women seeking MTP	No. of subjects	Percentage
Illiterate	1	9
Primary	1	9
Secondary	5	46
Higher secondary	2	18
College and above	2	18
	11	100

Among women seeking MTP (Medical termination of pregnancy), 91% were literates and their educational status is as described below in the Table 7.

DISCUSSION

As HIV is prevalent in epidemic proportions in India, blocking the chain of vertical transmission helps in significantly reducing the rate of new infections. Inclusion of appropriate strategies by NACO like universal screening, triple drug regimen for seropositive

mother, universal precautions and neonatal prophylaxis has contributed significantly in the recent trends of declining new HIV infections. It has also helped in maintaining the health of the seropositive mother. Also, proper counselling among seropositive women has helped in eliminating unwanted pregnancies and thereby reducing the chances of new infection. In present study we evaluated the various demographic factors among seropositive women along with maternal and perinatal outcomes which may reflect the effectiveness of various strategies adopted under PPTCT (Prevention of Parent-To-Child Transmission).

According to annual report of NACO 2015-16, 53.2 lakh pregnant women were tested for HIV. Among them 5856 were turned out to be seropositive (0.11%).⁴ In present study we found percentage prevalence of seropositive status among screened women being 0.28%. Percentage prevalence among other studies conducted by Swati Gupta et al⁵ and Ajit Kumar Nayak et al⁶ is 0.88% and 0.5% respectively. In another study conducted by Preetkanwal Sibia et al⁷ showed a seroprevalence rate of 1.03%. The difference in the prevalence among various studies could be attributed to difference in sample size and also variability in the prevalence of HIV among various states in India. There was also annual variability in the percentage prevalence of HIV among screened women in present study with highest percentage in the year 2014 (0.32%) and least in the year 2016 (0.22%).

Majority of the seropositive women in present study belonged to age group of 25-29 years. This is in consensus with various other studies such as Ajit Kumar Nayak et al,⁶ Preetkanwal Sibia et al⁷ and Poonam C. Sayare et al.⁸ This reflects the fact majority of pregnancies and deliveries happen among women belonging to this age group.

Seropositive status was noted among 32% of illiterates. This could be attributable to the ignorance on the modes of transmission and associated low socioeconomic status among illiterates acting as confounding factor in contracting infection through various means.

Majority of seropositive women in present study were homemakers (82%). As the hospital in which study was conducted was in an urban area catering to the needs of the local urban population, majority of the seropositive women belonged to urban population (79%).

Seropositive status in present study was more among multigravida (55%). This is in consensus with study conducted by Nayak AK et al⁶ (62.5%) and in contrast to study conducted by Vaishali Milind Patil et al⁹ in which primigravida constituted majority (53.83%). In another study conducted by Ashtagi GS et al¹⁰ seroprevalence was more among multigravid women (63.83%). Multigravidity and closely spaced pregnancies are more common in low socioeconomic status and illiterates. Similarly, prevalence of HIV is more common among

low socio economic status. So, the chances of acquiring infection is substantially increased during each pregnancy.

In present study we also tried to look into the status of the partner among seropositive women and we found 40% of partners were seropositive and declared concordant couple. This aided in counselling and subsequent treatment. Partner status was not known in 22% either due to denial for undergoing test or separated from wife or death of the partner.

The seropositive status in majority of the cases was detected during their antenatal period (66%). This reflects the effective implementation of universal screening programme under PPTCT.

In present study 82% of seropositive women had favourable CD4 count of >250/cu mm. Though a low CD4 count is of prognostic significance, current guidelines of PPTCT suggests for ART for seropositive women irrespective of their staging/CD4 count.

Among 101 seropositive women there were 75 live births (74%). Fourteen of them aborted (14%), 3 being spontaneous in their first trimester and 11 induced. Ectopic pregnancy was noted in 3 of them (3%) and still birth in 5 of them (5%). One of the seropositive women died during antenatal period due to eclampsia. There were 3 cases of ongoing pregnancy during the study period.

Predominant mode of delivery among seropositive women was the vaginal route (84%). This is in contrast to a study conducted by Dadhwal V et al¹¹ in which 91.5% of seropositive women had a caesarean delivery. This difference is due to the fact that most of the patients presented themselves in the late stages of labour, and caesarean section is not suggested unless obstetric indications to prevent vertical transmission as per NACO guidelines.

Three maternal deaths were noted during the study period. Two of them were during post-natal period. One of them had febrile illness and other subject had cryptococcal meningitis.

Pregnancy associated major co morbidities were noted in 81% of seropositive women who delivered with anemia being the major co-morbidity in 55 of them amounting to 65%. Similar results were found in study performed by Kay Tunkyi et al.¹² This could be attributable to high prevalence of anemia in pregnant women in India and due to ART which can exacerbate anemia.

Of the 75 live birth, 13 babies necessitated NICU (Neonatal Intensive Care Unit) admission (17%) with respiratory distress being the main cause for NICU admission. Six neonatal deaths born of seropositive

mother were recorded during study period and 4 died during early neonatal period.

Exclusive breastfeeding was practised in 91% of live births among seropositive women. This is in accordance with NACO guidelines.

At 18 months follow up seropositivity was noted among 2 children accounting to 3%. In both the cases mother was not treated during her antenatal period as the status was not known and directly presented during labour. 16% of children born to seropositive mothers have still not attained 18 months of age to complete the screening process.

Among seropositive women seeking MTP to avoid unwanted pregnancies most were literate.

CONCLUSION

Demographic characteristics illustrated in present study forms a supportive basis in understanding and formulating various targeted interventions in reducing the disease burden. Evaluation of partner status aides in counselling and subsequent treatment. Present study also forms a mirror reflection to the fact that with adequate treatment to mother and prophylaxis to the baby as directed by PPTCT, the burden of vertical transmission can be significantly reduced.

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