Changing trend in Seroprevalence of HIV-1 among antenatal mothers attending tertiary care hospital, Coimbatore.

KOGILAPRIYA B BALASUBRAMANIAMS
Department of Microbiology,
COIMBATORE MEDICAL COLLEGE

Abstract:
INTRODUCTION: Human immunodeficiency virus is increasing at an alarming rate globally. The commonest route of infection in children less than 15 years is mother to child transmission which accounts for more than 90 percent. Since definitive cure from HIV is far from reach prevention by timely screening of pregnant women and short course chemotherapy for antenatal mother and newborn is possible.

OBJECTIVE: To assess the changing trend of prevalence of HIV-1 infection among the antenatal mothers attending the PPTCT centre in our hospital for a period of three years.

Materials and methods: This retrospective study involves 9199 registered antenatal mothers who were referred from antenatal OPD of our hospital to the PPTCT centre during a period of three years from January 2010 to December 2012. Pretest counseling was given and informed consent obtained from the mothers. HIV screening was done for all as per NACO guideline.

Post-test counseling ART referral and CD4 count were done accordingly. Antiretroviral therapy with Nevirapine was given to seropositive AN mothers and their babies.

Results: Out of 9199 antenatal mothers screened 41 were found to be HIV positive with a Seroprevalence rate of 0.4 percent. The prevalence rate of HIV during 2010, 2011 and 2012 were 0.76 percent, 0.30 percent and 0.29 percent respectively. During the follow up of the babies, one baby was found to be positive for HIV-1 infection.

Conclusion: The seroprevalence was low and there is a declining trend of prevalence of HIV-1 infection during the study period. Antenatal screening for HIV through PPTCT is essential to prevent the epidemic of pediatric HIV.

Keyword: HIV-1, Seroprevalence, antenatal mothers.

Introduction: Human immuno deficiency viral infection is globally alarming. It has resulted in high morbidity and mortality in humans. First case of HIV in India.
An Initiative of The Tamil Nadu Dr. M.G.R. Medical University
University Journal of Pre and Para Clinical Sciences

was detected at Madras Medical College in Chennai in the year 1986\(^1\). The total number of HIV cases in Tamilnadu identified till March 2012 was 236313\(^2\). Pediatric HIV is a growing challenge in India with an estimated 100000 infected women giving birth to 30000 infected newborns per year\(^3\). Perinatal transmission of HIV occurs in 25 percent of women in Asia and UNAID report states that mother to child transmission is the commonest cause of HIV infection among children below 15 years.

Various sentinel surveillance programmes from different state authorities of our country reported the prevalence rate among antenatal mothers as 0.1 percent to 1 percent\(^4\). As HIV infection in women occurs primarily during their reproductive years pregnancy provides a unique opportunity for implementing HIV infection prevention strategies. Estimation of HIV seroprevalence in pregnancy leads onto effective and timely intervention of HIV transmission in newborn babies\(^5\). As HIV positive women in India are increasing in number consequently the number of babies acquiring HIV infection in the perinatal period is also expected to increase if the infection goes undetected during pregnancy. Therefore screening of pregnant women in early pregnancy may help in prompt counseling and therapy thereby reducing the risk of transmission to the child. In the absence of intervention, the rate of vertical transmission of HIV in babies is 15-45 percent. This can be reduced to less than 5 percent with proper intervention by screening for HIV in antenatal mothers through PPTCT centres\(^6\).

HIV is an enveloped virus belonging to subgroup lentivirus, family Retroviridae. It has three structural proteins (gag pol env) several non structural and regulatory proteins. Subtype A and C are most prevalent worldwide and in India respectively.

The commonest mode of transmission of HIV infection is through sexual route. But the chance of infectivity is as per the following order\(^7\):

- Blood and blood products.
- Organ transplantation.
- Mother to child transmission.
- Injections and injuries.
- Sexual route.

Vertical transmission of HIV infection is more during intrapartum period and breast feeding. The clinical spectrum of HIV includes acute HIV syndrome asymptomatic infection persistent generalized lymphadenopathy and finally end up in opportunistic infections neurological disorders and malignancies. The laboratory diagnosis of HIV includes complete blood counts antigen detection by PCR and antibody detection by ELISA and Western blot assay.

**Materials and Methods:**

This is a retrospective study done in the Prevention of Parent To Child Transmission centre, for a period of 3 years. (January 2010- December 2012)

The study population includes a total of 9,199 antenatal mothers referred from antenatal OPD of our hospital who have been registered at our PPTCT centre and screened for HIV. The antenatal cases (n=2028) referred to our hospital from peripheral centres for delivery and critical care and registered at our PPTCT centre are not included in this study. All the AN mothers were given pretest counseling and HIV testing done after getting informed consent from the mother. Under aseptic precaution, blood was withdrawn without anticoagulant. Serum was separated and screening test done as per NACO guidelines with three different rapid tests. Post test counselling was given based on the test results. All the seropositive AN mothers were
subjected for CD4 count and ART was started when indicated. Partner counseling and testing was offered for sero reactive mothers along with availability of MTP services. Oral Nevirapine tablet 200mg single dose was received by all seropositive mothers during the active stage of labour. Also the babies born to seropositive mother were given nevirapine drops. DNA-PCR and ELISA was done for all the babies born to seropositive mothers at 45 days and at 18 months respectively.

Results:
Out of 9199 antenatal mothers screened 41 were found to be HIV seropositive with a prevalence rate of 0.4 percent. (Table 1). Majority of the mother were in the age group of 25-35 years. This study was done for a three years period from 2010 to 2012. The prevalence rate of HIV in the year 2010, 2011 and 2012 were 0.76 percent 0.30 percent and 0.29 percent respectively (Table 2). Tamil Nadu, being a high prevalence state had an antenatal seroprevalence rate of more than 1 percent five years earlier. In our study there was a gradual decline in the seroprevalence of HIV among the antenatal mother over a period of three years. (Figure 1) Among the 41 seropositive AN mothers 5 of them underwent MTP and 36 mothers delivered of which one was stillbirth. Regular follow up of the babies was done and the HIV status of all babies was checked by DNA PCR at 45 days and by ELISA at 18 months. The results of the test showed that 1 baby was positive for HIV and 21 babies were found to be negative. Eight babies died, two babies were lost during follow up due to change of address and three migrated to their own place with proper referral from our PPTCT centre.

### Table 2

<table>
<thead>
<tr>
<th>Period of study</th>
<th>Pretest counseling</th>
<th>HIV tested</th>
<th>Number of seropositive</th>
<th>Seroprevalence rate</th>
<th>Post test counseling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan-Dec 2010</td>
<td>2368</td>
<td>2368</td>
<td>22</td>
<td>0.76 percent</td>
<td>2368</td>
</tr>
<tr>
<td>Jan-Dec 2011</td>
<td>3291</td>
<td>3291</td>
<td>10</td>
<td>0.30 percent</td>
<td>3291</td>
</tr>
<tr>
<td>Jan-Dec 2012</td>
<td>3940</td>
<td>3940</td>
<td>9</td>
<td>0.29 percent</td>
<td>3940</td>
</tr>
</tbody>
</table>

**FIGURE 1**

YEAR WISE DISTRIBUTION OF PREVALANCE OF HIV 1 INFECTION
Discussion:

In this retrospective study, forty one mothers were found to be positive for HIV among 9199 screened. The prevalence rate was 0.4 percent.

There was a decreasing rate of prevalence of HIV among pregnant women from 2010 to 2012. The prevalence rate was 0.76 percent in 2010, 0.30 percent in 2011 and 0.29 percent in 2012.

The study conducted in 2007 by Rajeswari Ramachandran et al on prevalence and risk factors of HIV infection in 6 districts of Tamilnadu, revealed the prevalence rate of HIV among antenatal women at Coimbatore district as 0.75 percent.

National sentinel surveillance -country report 2008-09 shows the prevalence rate of HIV in antenatal women was less than 0.5 percent in Tamilnadu. In urban areas of Tamilnadu the prevalence rate was more than 1 percent whereas in Ramanathapuram district it was above 3 percent.

Srijayanth Parameshwari et al studied the HIV Seroprevalence among AN mother for five years at Tiruchengode GH, Namakkal district of Tamilnadu and found the prevalence rate to be 0.42 percent in 2007.

Our study showed an average HIV prevalence rate of 0.4 percent from 2010 to 2012 in AN mother. There was a gradual decrease in the rate from 0.76 percent in 2010 to 0.29 percent in 2012 which is lesser than the prevalence rate when compared to the above studies.

THE HINDU, Newspaper report depicted the TANSACS statistics of the national and state level prevalence rate of HIV in 2011 as 0.38 percent and 0.25 percent respectively.

A study on seroprevalence of HIV in antenatal women conducted at a tertiary care hospital at Maharastra by S.K.Kulkarni et al, for a five year period reveals a decreasing prevalence rate of 0.54 percent in 2011. Swati Gupta et al in a study on seroprevalence of HIV among pregnant women for four year at AIIMS New Delhi showed an increase in the seroprevalence rate of 0.9 percent in 2006.

Conclusion:

The target of the National AIDS Control Programme PHASE-III (2008 to 2012) is the prevention of transmission of HIV, thereby decreasing its epidemic. In our study there is a decrease in HIV prevalence among the antenatal women during the screening period.

Emergence of epidemic of pediatric HIV can be reduced by more than 90 percent through early screening of antenatal women for HIV, followed by short term antiretroviral therapy of seropositive mother, safe delivery and baby feeding practices. In this study the prevalence rate of HIV in 2012 is 0.29 percent. It can be further reduced among the AN mothers by creating awareness in them which can be done by constant health education about the HIV transmission, following of safe sexual practices availability and accessibility of HIV screening centres safe delivery and infant feeding practices through PPTCT centres.
Bibliography:
8. Rajeswari Ramachandran V. Chandrasekaran M. Muniyandi K. Prevalence and risk factors of