Changing trends of HIV infection in children with relation to the ongoing PPTCT programme

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ABSTRACT

Mother to Child transmission of HIV is a major route of new infections in children. By providing Antiretroviral therapy to HIV infected woman during pregnancy, delivery, breast feeding & continuing the regimen to infants during breast feeding period will significantly prevent transmission from 30-45% to 2-5%. The aim of the study is to ascertain the changing trends with occurrence of HIV infection in children through the PPTCT programme (launched by Director General NACO on 14th September 2012) in prevention of transmission of HIV from HIV infected mother to child. 259 Antenatal Women registered from September 2012 to June 2013 at 105 ICTC centres in Krishna District were studied. All infants born to HIV infected mother were referred to Early Infant Diagnosis (EID) centres for HIV testing through HIV DNA PCR testing at 6 weeks, 6 months, 12 months and final confirmatory test at 18 months. Out of 259 Antenatal Women, ARV Prophylaxis was given to 126, ART given to 69, ART PLUS to 15, single dose Nevirapine to 10, 2 were not eligible for treatment, treatment was not initiated for 35 and 2 have missed the treatment. In 2011 April-12 March, out of 337 children tested for Dried Blood Spot, 18 were tested positive. In 2012 April-13 March, out of 253 children for Dried Blood spot, 6 were tested positive. Where as in April 2013 –2013 September out of 146 children tested, 5 were detected as HIV positive. In 2013 October-2013 June, out of 267 children tested, 1 case was detected as HIV positive. PPTCT programme can be effective if well conducted, thus minimal infectivity rate can be achieved in infants born to HIV infected mother.

Keywords: PPTCT, PMTCT, HIV

INTRODUCTION

Mother-to-Child transmission (MTCT) has been the largest source of HIV infection in children below age of 15 years [1]. By providing Antiretroviral therapy to HIV infected woman during pregnancy, delivery, breast feeding & continuing the regimen to infants during breast feeding period will significantly prevent transmission from 30-45% to 2-5%. According to National AIDS Control Organisation (NACO), about 30,000 infants acquire HIV infection every year [1]. Infection to newborn is transmitted by mother during perinatal period, but, considering the role of male partner in transmission of infection to woman, in India, it is appropriately called parent-to-child transmission (PTCT) [1].

Although the estimate of the number of people living with HIV in India has been reduced to less than half recently, based on a population – based data, but still, it has one of the highest numbers for a country in the world [2,3,4,5]. The South Indian state of Andhra Pradesh is estimated to have the highest number of HIV infected persons in India, and also the highest HIV positive rate (1.26%) among pregnant women tested at public sector sentinel centre in sentinel surveillance of 2006 [5]. Prevention of Mother to Child Transmission (PMTCT) of HIV is an important component of HIV prevention services in the state of Andhra Pradesh [6].

The Reproductive and Child Health Survey of 2002-2004 has estimated that in Andhra Pradesh 60.9% of the deliveries were institutional, with 22.1% deliveries conducted in public sector health facilities and 38.8% being in private sector [7]. The PMTCT services were started in Andhra Pradesh at one centre situated in a tertiary hospital.
attached to a medical college in the year 2000 [6]. Subsequently 13 PMTCT centres were started in hospitals attached to a medical college during year 2002, and 23 PMTCT centres were started in hospitals not attached to a medical college in the year 2003 [6]. During 2005-2006, 64, more PMTCT centres have been started, most of them were at smaller area hospitals and at community health centre which are not attached to a medical college [6].

The Purpose of the study is:
To find out the coverage of PPTCT services.
To study the changing trends in occurrence of HIV infection in Children through PPTCT programme (Launched by Director General NACO on 14th September 2012) in prevention of transmission of HIV from HIV infected mother to child.

MATERIALS AND METHODS

259 Antenatal women registered from September 2012 to June 2013 at 105 ICTC centres in Krishna District were studied. The Krishna District has been divided into 14 clusters comprising of 105 ICTC centres with 19 stand alone HIV testing centres and 15 Early Infant Diagnosis Testing centres. All the pregnant women visiting the antenatal clinic are given group counselling in local language (Telugu) on health and hygiene during pregnancy, importance of regular antenatal visits, nutrition, importance of HIV testing, HIV prevention and infant feeding. All of them were given Pre test counselling at all ICTC centres with an average time of 15-20 minutes per individual or within in a group for an average of 20-30 minutes.

After obtaining consent, HIV test was performed by three rapid tests (Comb aids, Triline, Trispot) and results whether positive or negative are shared by the counsellor along with individual post-test counselling. HIV seronegative women were counselled on HIV prevention and risk reduction behaviours. For HIV seropositive pregnant women, Post test counselling included psychological support, ARV prophylaxis, infant feeding options, disclosure issues, couple-counselling sessions, post partum follow up, nutrition & prevention of pregnancy. For seropositive Antenatal women, CD4 count test is done,

- If CD4 counts are below 350 (CD4<350) or HIV mother is in WHO Clinical stage of III or IV the pregnant women were started on ART for life long as per the guidelines.
- If the CD4 counts are above 350(CD4>350) WHO Clinical Stage of I or II the HIV infected pregnant women were started on ARV prophylaxis at or after 14 weeks of gestation and continued throughout pregnancy, delivery and till one week after cessation of breastfeeding. This is the major change in present PPTCT protocol where the HIV infected mother is given treatment not in the interest of her own health but to reduce the transmission of HIV to the baby.
- If CD4 counts are below 250 (CD4 <250) HIV infected mothers were started on Co-trimoxazole prophylaxis and continued throughout pregnancy, delivery and breastfeeding as per the existing National ART guidelines. The recommended first line ART/ARV Prophylaxis drug regimen for HIV infected pregnant women as per the PPTCT guidelines are:-

A) Tenofovir (TDF) 300 mg + Lamivudine (3TC) 300 mg + Efavirenz (EFV) 600 mg
Available as Fixed Drug Combination (FDC) –as one single pill. This regimen should be given only if there is no prior exposure to NNRTIs (Non Reverse Transcriptase Inhibitors) Nevirapine or Efavirenz in earlier pregnancy or any time.

B) ART/ARV prophylactic regimen for pregnant women having prior exposure to NNRTI for PPTCT:
- Tenofovir 300 mg + Lamivudine 300 mg + Lopinavir/Ritonovir (200/50mg)
- FDC of TDF (300 mg) + 3TC (300 mg) -1 tab OD
- FDC of LPV (200 mg)/ r(50 mg) – 2 tab BD

C) Treatment Protocol for pregnant women who walk directly into the labour room without known HIV status or unknown HIV treatment status:
Delivery room staff managing the delivery rooms –medical officers/paramedical staff in labour room provided the following services for cases detected HIV positive using HIV rapid screening test in labour/delivery ward.

- If Mother is on ART/ARV already –Continue the regimen during labour and after delivery.
- If Mother is not on ART/ARV Prophylaxis – At the onset of labour, Single dose Nevirapine 200 mg (ONLY ONCE) + Zidovudine + Lamivudine every 12 hours during labour and delivery. Continue Zidovudine + Lamivudine every 12th hourly (twice daily) for 8 days including the day of starting dose.
After delivery all HIV positive mothers were referred to ART centre at the earliest and ART/ARV prophylaxis should be initiated to cover the breastfeeding period.

All the babies born to HIV infected mothers received Nevirapine syrup once daily for 6 weeks. The pediatric dosage of Nevirapine syrup are as follows:

<table>
<thead>
<tr>
<th>Birth Weight of Infant</th>
<th>Dose in mg</th>
<th>Dose in ml</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth weight &gt;2.5 kg</td>
<td>15 mg once daily</td>
<td>1.5 ml once a day</td>
</tr>
<tr>
<td>Birth weight &gt;2 kg to &lt;2.5 kg</td>
<td>10 mg once daily</td>
<td>1ml once a day</td>
</tr>
<tr>
<td>Infants with birth weight &lt;2 kg</td>
<td>2 mg/kg once daily</td>
<td>0.2 ml/kg once daily</td>
</tr>
</tbody>
</table>

All the babies born to HIV infected mother were referred to Early Infant Diagnosis centre for HIV testing through HIV DNA PCR testing at 6 weeks, 6 months, 12 months & final confirmatory test at 18 months.

RESULTS

Out of 259 Antenatal women, ARV prophylaxis was given to 126, ART given to 69, ART PLUS to 15, single Nevirapine to 10, 2 were not eligible for treatment, treatment was not initiated for 35 & 2 have missed the treatment, shown in Table 2 and Graph 1.

Table No 1: Dosage of Nevirapine Syrup Based on Birth Weight of the Infant

<table>
<thead>
<tr>
<th>Birth Weight of Infant</th>
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<tr>
<td>Birth weight &gt;2 kg to &lt;2.5 kg</td>
<td>10 mg once daily</td>
<td>1ml once a day</td>
</tr>
<tr>
<td>Infants with birth weight &lt;2 kg</td>
<td>2 mg/kg once daily</td>
<td>0.2 ml/kg once daily</td>
</tr>
</tbody>
</table>

Table No 2:

<table>
<thead>
<tr>
<th>Regimen</th>
<th>During Pregnancy</th>
<th>After Delivery</th>
<th>Direct Labour</th>
<th>MTP</th>
<th>IUD</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARV</td>
<td>52</td>
<td>69</td>
<td>2</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>126</td>
</tr>
<tr>
<td>ART</td>
<td>22</td>
<td>36</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>-</td>
<td>69</td>
</tr>
<tr>
<td>ART+</td>
<td>5</td>
<td>9</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>Single Dose NVP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>Not Eligible</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Not Initiated</td>
<td>-</td>
<td>-</td>
<td>20</td>
<td>15</td>
<td>-</td>
<td>-</td>
<td>35</td>
</tr>
<tr>
<td>Missed</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>79</td>
<td>114</td>
<td>26</td>
<td>23</td>
<td>3</td>
<td>14</td>
<td>259</td>
</tr>
</tbody>
</table>

Graph 1:

In 2011 April - 2012 March, out of 337 children tested for Dried Blood Spot, 18 were tested positive, among them 2 babies died and 16 received ART.

In 2012 April-2012 September, out of 146 children tested, 5 were tested positive, among them 1 baby died and 1 did not receive ART.

In 2012 October-2013 June, out of 267 children tested, 1 case was detected as HIV positive.

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CONCLUSION

According to NACO 2012 report, against the annual target of 1,02,71,183 in 2011-12, about 70,87,186 (69%) pregnant women were counselled & tested by January 2012, which yielded detection of 13,213 HIV sero-positives (positivity being 0.19%) [8]. The highly prevalent states contributing largely to the detection of HIV positive pregnant women in the country were Andhra Pradesh detecting 24%, Maharashtra 19%, Karnataka 16% and Tamil Nadu 7% [8].

With Andhra Pradesh accounting for 24% of prevalence, effective & stringent measures have to be taken to minimize the transmission of HIV from mother to child.

According to WHO PPTCT 2010 Guidelines, The PPTCT programme has the potential to improve mother’s health as well as to reduce mother to child HIV transmission risk to 5% or lower in a breastfeeding population, from a background transmission risk of 35% (in the absence of any interventions and with continued breastfeeding) [9].

In our study it shows that the positive rate of the DBS test for PCR during April 2011-March 2012 was 5.34%, in April 2012-September 2012 positive rate of DBS test was 3.42% where as with the implementation of PPTCT programme from October 2012 to June 2013 DBS positive rate detected was 0.374%. However large population studies have to be done to confirm the efficacy of the programme with a thumping hand.

The major challenges encountered in making the PPTCT services successful are the weak health infrastructure, limited resources, limited management capacity funding and support for PPTCT. PPTCT can also play vital role in improving reproductive, maternal & child health services at primary level [9]. This would help in eliminating paediatric HIV infection of the new Global Plan towards the Elimination of HIV Infections Among Children by 2015 and keeping their Mothers Alive along with the substantial progress in the global scale up of PMTCT and ART coverage [10].

A well planned health research has been recognised as an important fundamental for improvement of health in all countries [11]. A systematic review conducted by Darak and etal have shown that in countries like India where PPTCT programme operates at large scale the public health literature on PPTCT is sparse, hence a comprehensive understanding of the context driven factors affecting the efficiency of the programme is necessary [12]. A systematic and more focussed public health research output should be generated to address issues related to performance of complex health systems, geographic differences and sociocultural factors affecting women’s access to PMTCT services [12].
REFERENCES

[9] WHO New guidance on prevention of mother-to-child transmission of HIV and infant feeding in the context of HIV.