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RESEARCH ARTICLE

A RETROSPECTIVE STUDY OF PERINATAL TRANSMISSION OF PPTCT IN PLWH

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ABSTRACT

Aim of study: To study perinatal transmission in PLWH delivered in last five years at C. U. SHAH medical college and hospital surendranagar. **Result**: In this study, out of 50 PLWHA patients, one infant was infected, 20% of them were breastfed, 36% were delivered by caesarean section, 56% were delivered by vaginal delivery, 8% were instrumental (6% vaccum assisted and 2% forceps delivery). Among them all mothers and infants were given treatment. **Conclusion**: Nevirapine has been shown to reduce significantly vertical transmission when it used antepartum and intrapartum by the mother and postpartum by the newborn for 6 weeks. The use of elective Caesarean section should probably be reserved for women who fail to achieve viral suppression at the time of delivery or if any obstetrical reasons in india. Breastfeeding reducesthe long-term efficacy of perinatal antiretroviral therapy. All PLWH patients should avoid breastfeeding the newborn if possible.

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INTRODUCTION

In PLWHA, the infection may spread during pregnancy, labour, or breastfeeding. However, the risk of PTCT of HIV may be reduced with the use of HIV medications-Antiretroviral therapy (ART). These medications can be used by women before, during, and after pregnancy. After delivery, babies are also given the medication to reduce the risk of infection. ART monotherapy has three parts: (i) prenatally beginning at/after 14 weeks gestation (ii) During labour and (iii) As chemoprophylaxis for 6 weeks in exposed newborns, associated with a major reduction in perinatal HIV transmission. Because it can be spread through breast milk, mothers with the infection should avoid breastfeeding to their children. Infection with HIV/AIDS is not a contraindication to pregnancy. Appropriate treatment, can reduces the risk of mother-to-child infection can be reduced. Elective Caesarean section, antiseptic precautions and vitamin supplementation are also potentially useful adjuncts to ART.

Risk factors for perinatal HIV infection: The time of transmission from mother to child has great importance when planning prevention strategies. Most of the vertical transmission of HIV occurs at around the time of birth (Mofenson, 1997; Stringer and Vermund, 2010; Bertolli *et al.,* 2007; Chouquet *et al.,* 2000). In developing countries like India ART given only in late gestation or peri-partum so elective Caesarean section, have been shown to be effective in reducing vertical HIV transmission (Wade *et al.,* 2001; The European Mode of Delivery Collaboration, 2003) Maternal plasma CD4 count and maternal viral load at the time of delivery are the best predictor of vertical transmission (Sperling *et al.*). Levels of HIV virus in maternal g)enital tract secretions may affect vertical transmission (John *et al.,* 2004). Obstetric factors like rupture of membranes for >4 h, placental abruption, episiotomy, the presence of vaginal lacerations during labour or preterm delivery associated with prolonged membrane rupture, may increase exposure of the fetus to maternal blood and body fluids and have been identified as important risk factors for perinatal HIV transmission (Boyer *et al.,* 1994). The presence of chorioamnionitis or genital ulcers can also increase peri-partum transmission risk. Breastfeeding is responsible for most post-partum transmission (Kreiss, 2006). Risk of HIV transmission via breastfeeding is 14% from mothers with established HIV infection and 29% from mothers who acquire HIV after birth (Dunn *et al.,* 2008). Vitamin A deficiency and malnutrition which can cause immune deficiency state and disruption of mucosal integrity and increased vertical HIV transmission (Semba, 2007). Vitamin A supplementation during pregnancy has not any significant benefit in prevention of perinatal transmission (Burns *et al.,* 1999). Maternal use of illicit drugs such as cocaine and heroin

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have been associated with a risk of to three-fold higher of transmission (Rodriguez *et al.,* 1996). Cigarette smoking during pregnancy may also increase the risk of transmission (Burns *et al.,* 2011).

METHODS

A study performed on 50 PLWH patient delivered in last five years from year 2012 to 2017 at c u shah medical college and hospital surendranagar. Women already taking HAART at pregnancy onset are encouraged to continue the regimen if there is adequate viral suppression. Nevirapine(2mg/kg) is given during labour and delivery to women near delivery. A 2mg/kg given, postpartum patients are encouraged to avoid breastfeeding, all infant were given immediate postpartum treatment and screening of all the infants was done.

RESULTS

Based on these observations, all of them who had taken ART during pregnancy, 16% had previous ART exposure, 20% were breastfed, all of them were given nevirapine intra partum and all infants were given nevirapine. However 1 infant was infected. Highly active antiretroviral therapy (HAART), composed of three or more agents including either an HIV-1-specific protease inhibitor or NNRTI along with use of zidovudine by HIV-seropositive pregnant women prenatally, intra-partum, and begun in the newborn within 12 h of birth (Centers for Disease Control, 2012). Based on these observations, mother to child transmission at the time of delivery is the most common cause of pediatric HIV infections. Vertical transmission is increased by breastfeeding, most transmission occurs in first 6 months. Maternal HAART treatment along with intrapartum nevirapine prophylaxis has dramatically reduced the perinatal transmission risk. When ART is given in the prenatal, intrapartum and neonatal periods along with caesarean delivery, the risk of neonatal transmission decreasesfurther.

Table 1. Statistical Data of Mother and Infant Exposed and Treated

Total number of patients	50
Treatment taken during pregnancy	50
Previous ART exposure	8
Breastfeeding given to newborn	10
Treatment given to infant	50
Number of infant infected (four infants were died & two mothers were migrated to other place)	1

Table 2. Data Segregated in terms of –Age, Parity, Mode of Delivery

Total number of patients	50
Age between 20 to 25	27
Between 25 to 30	19
Between 30 to 35	4
Parity	
Primigravida	18
Second gravida	18
Third gravida	10
Fourth gravida	3
Fifth gravida	1
Mode of delivery	
Normal vaginal delivery	28
Caesarean section	18
Instrumental delivery	4(vaccum assisted 3, forceps delivery 1)
Transmission to infant out of 44 infant (four infants were died & two mothers were migrated to other place)	1

Table 3. Distribution as per CD4 T-cell count and Outcome of Delivery

CD4 cell count	
<350 cells/mm^3	22
>350 cells/mm^3	28
Sex of the infant (out of 44 infants)	
Male	
Female	19
	25
Health of the infant (out of 44 infant)	
Well	
Admitted to hospital	16
	8

DISCUSSION

In PLWH, her risk of transmission of the virus to her baby can be reduced by ART. Transplacental HIV transmission can occur in early pregnancy. In most cases, however, HIV will not cross through the placenta from mother to baby. Intra uterine infections, a recent HIV infection, advanced HIV infection or malnutrition reduces protective ability of placenta. A baby can become infected in womb, during delivery or while breastfeeding. In developed countries, perinatal HIV transmission rates without ART range between 14 and 26%, whereas in developing nations the rates range from 21 to 43%. (Connor *et al.*). Without treatment, HIV transmissionrate from mother-to-child is 15% to 45%. However, ART and other effective PMTCT interventions can reduce this risk to below 5% (World Health Organization, 2016). Kourtis and colleagues (2010) have proposed a model for estimation of vertical transmission, accordingto them 20% of transmission occur before 36 weeks of gestation, 50% in days before delivery, and 30% intrapartum. Transmission rates for breastfeeding infants are 30-40% (Kourtis and colleagues, 2010). Women already taking HAART at pregnancy onset are encouraged to continue the same regimen if there is adequate viral suppression. Nevirapine is given during labour and delivery. A 2mg/kg is given. Optimal management of labour is uncertain, artificial rupture of membranes and invasive fetal monitoring should be avoided, labour augmentation is helpful to shorten the interval of delivery and to decrease the transmission risk. Avoidinstrumental delivery. Elective Caesarean delivery at 38 weeks of gestation has been recommended to decrease the transmission rate.

Conclusion

Therapeutic strategies for HIV infection in pregnancy contain three goals in mind:

i. Greatest proportion of newborns should be prevented from HIV transmission;
ii. To utilize ART which will be potent and durable to prevent HIV disease progression and development of drug resistance in the mother;
iii. ART should be provided for the minimum exposure necessary for both safety and efficacy.

Early identification of HIV infection in the mother is important to maximize maternal options and allow optimal timing of therapy. The role of adjunctive therapies, such as elective Caesarean section, vitamin supplementation and antiseptic washes. Identifying the risk factors which causes mother–infant HIV transmission may lead to development of novel approaches that may be applicable to large-scale, inexpensive development.

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