

Perinatal transmission in Human Immunodeficiency Virus infection: a cross-sectional study from a tertiary care center in North India

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SUMMARY

Perinatal transmission of Human Immunodeficiency Virus (HIV) infection is an important mode of transmission in developing countries. The aim of this study was to evaluate the epidemiology of perinatal transmission of HIV infection in pregnant women living with HIV/Acquired Immune Deficiency Syndrome [AIDS]. A cross-sectional study was conducted in which HIV positive females who were pregnant at any time between April 2015 and July 2017 were interviewed and their case records analyzed. The collected data were entered and analyzed using Stata v11. Results were expressed as numbers and percentages for categorical variables and as mean and standard deviation [SD] for continuous variables. In all, 51 wom-

en were included in the study, 41 of whom had little knowledge concerning the transmission mode of HIV and its prevention. A total of 28 of these females were diagnosed with HIV during their pregnancy (First trimester-4, second trimester -18 and third trimester -6). A total of four babies delivered by these women were diagnosed with HIV. All the four babies were delivered by mothers who were diagnosed with HIV in or after the second trimester of the pregnancy. There is a need to create awareness amongst pregnant women about the importance of antenatal checkups.

Keywords: Acquired Immune Deficiency Syndrome, antenatal, Anti-Retroviral Therapy.

INTRODUCTION

Perinatal transmission of Human Immunodeficiency Virus [HIV] includes transmission of HIV from mother to child during the ante-natal period or breast feeding. Transmission in the ante-natal period can occur in-utero or during the intra-partum period [labor or delivery]. Transmission during the intra-partum period is more common than in-utero. This may be due to the protective effect of placenta [1]. The risk of transmission from mother to child in absence of intervention

can be as high as 48% and can be reduced to less than 1% if proper anti-retroviral therapy [ART] to mother and prophylaxis to the newborn is initiated [2, 3]. The risk of transmission is directly proportional to the maternal viral load and since the transmission occurs in majority of cases during the intra-partum period or during breastfeeding, the aim of treatment is to reduce the maternal viral load by the time of delivery [4]. The key to suppression of viral load by the time of delivery is early diagnosis of HIV and initiation of treatment. This has been achieved by routine screening of HIV in ante-natal mothers during the first ante-natal visit in the first trimester of pregnancy. The transmission of HIV from parents to child has been reduced to a great extent in recent times due to early diagnosis and initiation of ART [5].

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In developing countries, the first contact of some pregnant patients with the hospital may be often delayed resulting in late diagnosis, incomplete suppression of viral load and perinatal transmission of HIV. The aim of this study was to evaluate the prevalence of perinatal transmission of HIV in positive pregnant women from North India and to study the association of perinatal transmission and delay in HIV testing.

■ PATIENTS AND METHODS

This was a cross-sectional study that was conducted in the ART clinic of All India Institute of Medical Sciences [AIIMS], New Delhi. All HIV positive females who were pregnant anytime between April 2015 and July 2017 and delivered a living baby were enrolled after taking informed consent. The enrolled patients were interviewed, and their case records were analyzed. The clinical and laboratory details were recorded using a pre-defined clinical report form. HIV status of the spouse was also recorded. Adequacy of knowledge about the mode of transmission of HIV and the preventive measures that can be taken to avoid the infection was checked in all the enrolled patients using a pre-defined set of questions. The

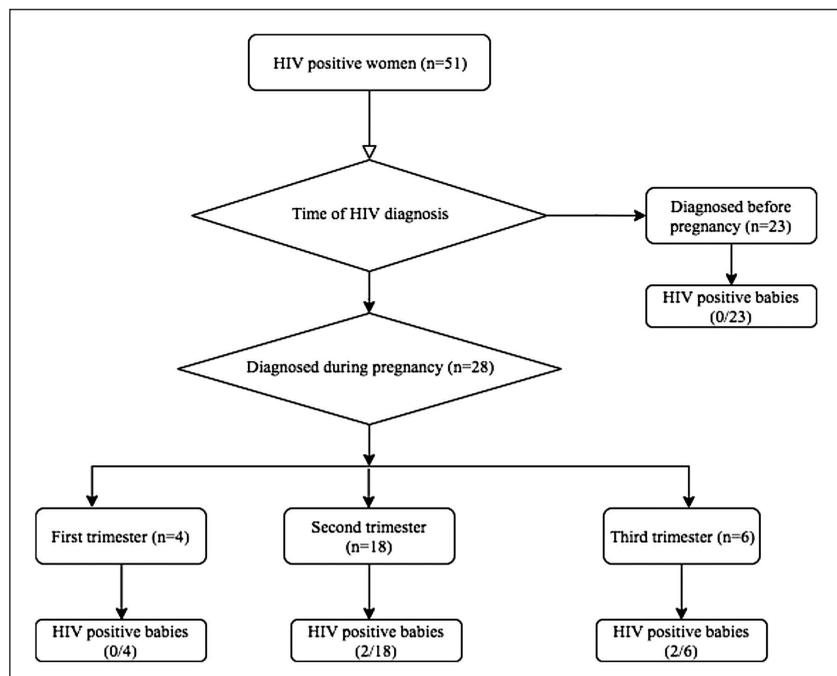
patients were categorized into four groups based on the time of diagnosis of HIV: before pregnancy, first trimester, second trimester and third trimester. The treatment details were recorded for all the pregnant females [timing of initiation of ART, details of ART taken] and the infants (nevirapine prophylaxis). The adequacy of counselling at the time of diagnosis and initiation of ART using a pre-defined set of questions was also assessed. Adherence to ART [pill counting method] was recorded using the details from the case file. Finally, the mode of delivery and outcome of pregnancy [HIV status of the child at eighteen months of age: positive or negative] was also recorded.

The collected data was entered in Microsoft excel workbook and was analyzed using Stata v11. Results were expressed as numbers and percentages for categorical variables and as mean and standard deviation [SD] for continuous variables.

■ RESULTS

A total of 51 women who had delivered between April 2015 and July 2017 were included in the study (Figure 1). All but one woman in our study were in age group of 18-26 years. The spouses of all the patients were either HIV positive or were

Figure 1 - Flow chart showing perinatal transmission in HIV positive pregnant women.



later diagnosed with HIV. Of the women enrolled in the study, a total of 80% [41/51] of the women did not have adequate knowledge of mode of transmission of HIV and its prevention. A total of 28 of these females were diagnosed with HIV during their pregnancy (Figure 1). Rest of the 23 females were aware of their status prior to their pregnancy and were already on ART. Of these 28 women, four were diagnosed in the first trimester, 18 in the second and six in the third (Figure 1). Of the six women diagnosed in the third trimester of pregnancy, two were diagnosed during/near labor (Figure 1). All 28 of these women reported that they were counselled about the disease after the diagnosis was made and were advised to initiate ART immediately. A total of 27 of these women were initiated on tenofovir, lamivudine and efavirenz after pre-ART counselling. Only one patient refused ART during pregnancy. Out of 53 deliveries, 15 patients were delivered vaginally and 38 were delivered by lower segment caesarean section. All neonates received nevirapine prophylaxis. A total of four babies were diagnosed with HIV based on the early infant diagnosis algorithm. All the four babies were delivered by mothers who were diagnosed with HIV during the pregnancy. Out of these four, mothers of two babies were diagnosed and started on ART near labor or during labor (Figure 1). The mothers of two other HIV positive babies were on ART from second trimester (Figure 1). Poor adherence was recorded in only one of these two mothers.

■ DISCUSSION

Owing to the positive interventions of Acquired Immune Deficiency Syndrome (AIDS) control program, the transmission of HIV infection and care of patients living with HIV/AIDS has improved to a great extent [6]. However, HIV in pregnancy is an area of concern that needs renewed interest, particularly in developing countries [7]. Perinatal transmission is an important mode of transmission in children under 14 years of age and prevention in this age group is crucial for AIDS control. In India, it is estimated that more than 49,000 women living with HIV become pregnant and deliver each year [8]. Prevention of mother to child transmission in India is centered on good antenatal care, early detection and early

initiation of ART [8]. With the advent of combination antiretroviral therapies, lower transmission rates have been achieved in the developed world [7]. The first study that showed the role of ART in reducing the perinatal transmission was the Pediatric AIDS Clinical Trials Group 076. It was a double blinded randomized control that compared the role of zidovudine [antenatal and infant prophylaxis] vs placebo [3]. As a result of subsequent studies, recommendations were made to initiate pregnant women on triple drug ART as and when they are diagnosed with HIV [2, 9]. In those cases, where pregnant women did not take maternal prophylaxis or treatment, infant prophylaxis [zidovudine/nevirapine/combination] alone has been associated with lesser transmission [10]. Women are vulnerable to HIV infection owing to the increased risk of heterosexual transmission in them. Most of the individual in our study were between 18 and 26 years of age. This highlights the need of sex education in the younger population. Increase in awareness amongst women regarding the modes of HIV transmission and its prevention is paramount [11]. In an observational cross-sectional study of 3000 antenatal women from West Bengal (Eastern India), 12.86% of the women had never come across the term HIV/AIDS. A total of only 6.83% of women in that study knew about the possible transmission of HIV from mother to child [12]. Similar studies from other developing areas demonstrate the lack of awareness regarding HIV/AIDS in women and highlight the need for action in this area [13].

The proportion of pregnant mothers who are tested for HIV remains low [less than 80%] even in developed countries such as United States of America [14]. The number is expected to be far worse in developing settings. Therefore, there is a need to create awareness regarding the need of early ante-natal visit in pregnancy and the need of HIV testing in those who visit [15]. In India, the national guideline recommends routine HIV testing in the first trimester. This is important as early diagnosis in this stage and prompt initiation of ART will lead to suppression of viral load [16, 17]. This will subsequently decrease the chances of HIV transmission to baby by several folds. In our study, more than 50% of the pregnant women were diagnosed to have HIV for the first time during the antenatal visit. However, many of these women presented late in pregnancy and there-

fore, sufficient time for viral suppression may not be available in such cases. None of the patients who attended the antenatal clinic in the first trimester and were initiated on ART transmitted HIV to their babies. All of the four cases where the baby got HIV presented in or after the second trimester.

Thus, our study underscores the fact that timely diagnosis and adherence to ART can prevent transmission of HIV to the infant. There is a need for creating awareness amongst the young female population regarding the measures that can be taken to prevent HIV infection and the importance of early and adequate antenatal care. The primary care physicians should be made aware about the importance of early HIV testing during pregnancy and early initiation of ART.

Source of support

None

Conflict of interest

None

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