

Original research article

A Study of HIV infection in Pregnancy and its Outcomes in a Tertiary care Hospital of Adilabad in Telangana State.**¹ Dr. Godipelli Laxmi , ^{*2} Dr. Numi Anjum , ³ Dr. Sayuktha****^{1,2,3} Assistant Professor, Department of Obstetrics and Gynecology, RIMS, Adilabad, Telangana State.****Corresponding Author: Dr. Numi Anjum****Abstract**

Human immunodeficiency virus (HIV) infection has persisted as the world's leading infectious killer. Most of the women infected with HIV are in the reproductive age group and are capable of passing this infection to their babies. Most (90%) of the infections in children aged under 15 years are from maternally-acquired HIV. The benefits of antiretroviral treatment (ART) in decreasing mother to child transmission (MTCT) of HIV infection. Present study is on HIV infection in Pregnancy and its outcomes. This is a Retrospective study done in Tertiary care hospital of RIMS, Adilabad, Telangana state. 255 HIV positive mothers registered in ART Centre were included in study. 215 were diagnosed in ANC and 40 during PNC. 12 mothers developed tuberculosis. 49 babies were HIV positive, out of which 2 died. 15 women died and 216 are alive on ART treatment at present. Timely diagnosis of HIV infection during pregnancy is important for preventing MTCT. HIV infected mothers may give birth to HIV negative babies with the help of multidisciplinary teams. With good antenatal care and multidisciplinary approach HIV-infected women can have good pregnancy outcome.

Key words: Human Immunodeficiency Virus, Pregnancy, Antiretroviral Therapy.

Introduction

Human Immunodeficiency Virus (HIV) infection has persisted as the world's leading infectious killer with an estimated 39 million deaths since the first cases were reported in 1981.[1] An estimated 35 million people are currently living with HIV and 59% of these are women.[2] In sub-Saharan Africa the percentage of young women aged 15–24 years living with HIV is twice that of young men.[3,4] Every minute, it is estimated that, worldwide, one young woman becomes infected with HIV. Most of the women infected with HIV are in the reproductive age group and are capable of passing this infection to their babies. Most (90%) of the infections in children aged under 15 years are from maternally-acquired HIV.5 In spite of the high burden of HIV among women, they remain underserved and face inequalities, thus limiting a full response to this epidemic. In low income countries, the predominant mode of transmission is through heterosexual contact.[5] The findings of previous research suggest that pregnancy does not adversely affect the natural course of HIV in asymptomatic women.[6–8] However, HIV infection in pregnancy has been linked to adverse pregnancy outcomes, especially in low-income countries.

Maternal anaemia, tuberculosis, miscarriages, still births, low birth weight (LBW) babies and preterm births have been reported.[9-12] These adverse pregnancy outcomes have been associated with low CD4 counts, specific maternal infections, tuberculosis, malaria and opportunistic infections.[13,14] Measures to improve pregnancy outcomes include treatment with antiretroviral (ARV) drugs, multi-nutrient supplementation, vitamin. Perinatal

transmission of human immunodeficiency virus (HIV) infection occurs in the absence of any interventions. The benefits of antiretroviral treatment (ART) in decreasing mother to child transmission (MTCT) of HIV infection are largely undisputed.[15] Current practice has adopted the use of highly active antiretroviral therapy (HAART) in an attempt to suppress viral load below detection, to minimize MTCT of HIV. In India, the program for Prevention of Mother to Child Transmission (PMTCT) of HIV was launched in the year 2002. With effect from 2014, India adopted the World Health Organization (WHO) instigated Option B+ for prevention of MTCT of HIV. There are now two concerns in HIV infected women becoming pregnant: The effect of HIV infection on pregnancy and the effect of HAART on pregnancy outcome.

Concerns regarding the teratogenic risk of ART were alleviated by emerging data and, subsequently, maternal ART became the cornerstone of MTCT prevention strategies [16]. MTCT in a non-breastfeeding setting will occur during pregnancy, which emphasizes the importance of prenatal care [17]. In addition, premature rupture of membranes is associated with increased MTCT risk [18]. Use of a planned caesarean section (CS) is found to lower the risk of transmission from 10.5% to 1.8% [19]. In addition, maternal viral load at delivery is another major risk factor. If perinatal maternal viral load is below 50 copies/ mL, MTCT risk drops below 0.5%, regardless of treatment or delivery mode[20]. Present study is on HIV infection in Pregnancy and its outcomes in a Tertiary care hospital of Adilabad in Telangana state.

Material and Methods:

This is a Retrospective study done in Tertiary care hospital of RIMS, Adilabad , Telangana state . HIV positive mothers registered in ART Centre of RIMS from 1-1-2008 to 30-06-2021 were included in study. 255 HIV positive mothers were included in study. Institution Ethical committee approved this study.

Data was extracted from patient files, as well as from digital records. Maternal age, obstetric history such as gravida, parity, coexisting diseases, and length of hospital stay were recorded for each patient. Main pregnancy complications were also noted. Laboratory findings regarding HIV virus load, CD4 cell count, and haemoglobin concentration were recorded separately during pregnancy and at birth. Details of the pregnancy follow-up were taken. Neonatal features, such as birth weight, final HIV status were analyzed. For known HIV-positive women, there is an integrated pregnancy follow-up program at the hospital center. All women were linked to the ART center and were looked after in consultation with HIV physician. On registering in antenatal care, they underwent antenatal investigations as per routine practice, CD4 counts and screened for other sexually transmitted infections. Women on ART were also monitored for drug toxicity. The type of antiretroviral (ARV) prophylaxis women received for prevention of perinatal transmission depended on the time period of the study. Antiretroviral therapy was administered based on CD4+T cell count and clinical stage.

4s screening was done to diagnose Tuberculosis. Data was analysed for Age groups of mothers, CD4 counts at time of Registration, ART regimen given, number of babies HIV infected, Mortality of mother and babies, and status of mothers in ART care at present. Data was tabulated for frequency and percentage.

Results:**Table 1: Period of Diagnosis of HIV infection in mothers**

Diagnosis Of HIV infection	Number of Patients (255)	Percentage
ANC	215	84.31 %
PNC	40	15.68 %

215 Women were detected HIV infected in ANC period and 40 during PNC.

Table 2: Age Groups of HIV Infected Mothers.

Age Groups(Years)	Number of Patients(255)	Percentage
< 20	25	9.8 %
21-30	172	67.45 %
31-40	55	21.56 %
>41	03	1.17 %

67.45% women were between age 21-30 years, 21.56% were between age 31-40 years.

Table 3: CD4 count in mothers at time of Registration.

CD 4 count	Number of Patients(255)	Percentage
< 200	21	8.2 %
200-500	167	65.49 %
>500	39	15.29 %
Details not available	28	10.98 %

8.2% women had CD4 count less than 200 and 65.49 % had CD4 count between 200-500.

Table 4: ART treatment regimen in HIV infected mothers.

ART treatment regimen	Number of Patients(255)	Percentage
Tenofovir, Lamivudine, Efavirenz	123	48.23 %
Tenofovir, Lamivudine, Dolutegravir	83	32.54 %
Zidovudine, Lamivudine, Nevirapine	05	1.96 %
Abacavir, Lamivudine, Efavirenz	03	1.17 %
Tenofovir, Lamivudine, Lopinavir-ritonavir	04	1.56 %
No details available	37	14.50 %

Above table shows various ART Regimen being taken by mothers.

Table 5: 4s Screening for diagnosis of Tuberculosis in HIV infected mothers.

4s Screening for Diagnosis of Tuberculosis	Number of Patients having Tuberculosis(255)
Total number of mothers having Tb	12
Pulmonary Tb	10
Extra-pulmonary Tb	02

Out of 255 women, 12 got Tuberculosis infection. 10 Women had Pulmonary Tb and 2 had Extrapulmonary Tb.

Table 6: Pregnancy and Perinatal outcome in HIV infected mothers.

HIV status of babies	Number of Babies(255)
HIV positive	49 (02 Died out of 49)
HIV negative	206

49 babies were found to be HIV infected out of which 2 babies died.

Table 7: Status of HIV infected mothers in ART Care.

Status of HIV infected mothers	HIV infected mothers(255)	Percentage
Death	15	5.88 %
Lost to Follow up	79	30.98 %
Transfer out	11	4.31 %
ART Miss	34	13.33 %
Alive on ART	116	45.49 %

116 Mothers are live on ART, 79 mothers lost to follow up, 15 mothers died and 11 were transfer out.

Discussion:

Most of the thirty-three million people living with HIV are in the developing world, where HIV infection in pregnancy has become the most common medical complication of pregnancy in some countries. More than 70% of all HIV infections are a result of heterosexual transmission and over 90% of infections in children result from mother-to-child transmission. Almost 600 000 children are infected by mother-to-child transmission of HIV annually, over 1600 each day. In parts of southern Africa, the prevalence of HIV in pregnant women is over 30%, while rates of new infections are rising in south-east Asia and the proportion of infections occurring in women is increasing in many developed countries. Women are particularly susceptible to HIV infection for both biological and socio-cultural reasons. Pregnancy does not have an adverse effect on the natural history of HIV infection in women in most studies, although AIDS has become a leading cause of maternal mortality in some areas, as the epidemic progresses. Adverse pregnancy outcomes that have been reported in HIV positive women include increased rates of spontaneous early abortion, low birth weight babies, and stillbirths, preterm labour, preterm rupture of membranes, other sexually transmitted diseases, bacterial pneumonia, urinary tract infections and other infectious complications. Although whether these are attributable to HIV infection is unknown. Reported rates of transmission of HIV from mother to child range from 15% to over 40% in the absence of antiretroviral treatment and vary across countries. Transmission can occur in-utero, during labour and delivery or post partum through breast milk. Most of the transmission is thought to occur in late pregnancy and during labour. Factors associated with an increase in the risk of transmission include viral factors, such as viral load, genotype and phenotype, strain diversity and viral resistance; maternal factors, including clinical and immunological status, nutritional status and behavioural factors such as drug use and sexual practice; obstetric factors such as duration of ruptured membranes, mode of delivery and intrapartum haemorrhage; and infant factors, predominantly related to the increased risk of transmission through breastfeeding. The use of antiretroviral treatment in pregnancy in a long-course regimen reduces the risk of transmission by two-thirds. Where this

has become standard treatment, transmission rates have dropped significantly. Short course therapy with zidovudine whether given from 36 weeks until delivery or from delivery until one week postpartum appears to decrease transmission risk by approximately 50%. The management of pregnancy in HIV-positive women should be seen as part of the holistic and long-term care of the woman. The medical care of HIV positive women should be tailored to the individual needs of the woman. Obstetric management will be similar to that for uninfected women in most instances, although invasive diagnostic procedures should be avoided, and iron, folate and other vitamin supplementation should be considered. The use of antiretroviral drugs in pregnancy for the prevention of mother-to-child transmission of HIV should be encouraged and provided as widely as possible. HIV infection in pregnancy has become the most common complication of pregnancy in some developing countries. This has major implications for the management of pregnancy and birth. With an estimated one and a half million HIV-positive women becoming pregnant each year, almost 600 000 children will be infected by mother-to-child transmission annually: over 1600 each day [21]. Maternity services in areas of high HIV prevalence have several responsibilities. Women in the developing world are at higher risk of HIV infection than their male counterparts for a number of reasons, biological and sociological. Biological factors The rate of transmission of HIV from male to female is two to three higher than that from female to male [22]. In pregnancy, immune function is suppressed in both HIV-infected and uninfected women [23]. There is a decrease in immunoglobulin, reduced complement levels in early pregnancy and a more significant decrease in cell-mediated immunity during pregnancy. These normal changes during pregnancy have led to concern that the effect of pregnancy in HIV disease could be to accelerate the progression of the infection. HIV infection has been reported to have little effect on pregnancy outcome or complications in the developed world [24]. It is often difficult to determine the relative contribution of HIV infection, drug use and inadequate antenatal care to adverse outcomes in these women. Tuberculosis is the commonest opportunistic infection associated with HIV in the developing world, and particular attention should be paid to its diagnosis in pregnant HIV-positive women. Reported rates of transmission of HIV from mother to child range from around 15%-25% in Europe and the USA to 25% to 40% in some African and Asian studies [25]. Transmission of HIV-1 can occur in-utero, at the time of labour and delivery, or postnatally through breastfeeding. Knowledge about the likely timing of transmission is important for the design of possible interventions. Evidence for in utero transmission (as early as 8 weeks gestation) comes from: the detection of HIV-1 in fetal specimens and placental tissue, viral isolation from 20%-60% of infected infants at the time of birth, the presence of p24 antigen in fetal serum; and an observed bimodal distribution of symptoms in children [26]. With increasing knowledge about the underlying mechanisms of mother-to-child transmission of HIV-1 has come an increased emphasis on the search for interventions to prevent or reduce the risk of transmission [27]. The successful use of antiretroviral therapy in developed countries has led to suggestions that it may eventually be possible to reduce perinatal transmission rates to less than 2% [28]. A number of possible intervention strategies have been proposed or are under investigation. Possible strategies known or under investigation for the prevention of mother-to-child transmission of HIV

- Therapeutic interventions Antiretroviral therapy: zidovudine alone or combination, long- or short-course
- Vitamin A and other micronutrients
- Immunotherapy
- Treatment of STD
- Obstetric interventions: Avoidance of invasive tests and procedures like artificial rupture of membranes, routine episiotomy, minimise use of instrumental deliveries. In India normal

vaginal delivery is recommended unless the women has obstetric indication for Caesarean section delivery.

- **Modification of infant feeding practice:** Avoidance of breastfeeding ,Early cessation of breastfeeding are recommended in western countries, but in India as per NACO guidelines mother living with HIV should exclusively breast feed for 6 months and then continue breastfeeding for 12-24 months with complimentary diet.

MANAGEMENT OF HIV- POSITIVE PREGNANT WOMEN: The management of HIV positive women during pregnancy is multifaceted, combining medical and obstetrical management with counselling and social support. The woman's social and psychological concerns may be as important as her need for medical care. Ideally, a team approach with health workers, counsellors and support groups should be used [29]. In all cases, the management in pregnancy, including antiretroviral treatment, should be seen as only a part of the continuum of care for the mother and child [30]. Ongoing care may be undertaken at home, within the primary health care services, at hospitals, or at specialist clinics, depending upon the individual needs and available facilities. The following discussion highlights some of the management issues for HIV positive pregnant women, and does not provide detailed guidelines. Diagnostic procedures and medical management will be dependent upon the available resources and each country should develop appropriate recommendations for their own situation.

Postpartum care: The postpartum care of HIV positive women should be similar to that for uninfected patients. They do not require separate nursing facilities. Women may, however, require private facilities to lessen the social stigma associated with not breastfeeding if this is the choice they make in a culture which is likely to condemn such behaviour. HIV positive women are more prone to postpartum infectious complications - including urinary tract, chest, episiotomy and caesarean section wound infections. Health workers should be aware of this and observe for signs of infection. Mothers should be given information on the early symptoms of infection at the time of discharge. The mother should be counselled on the need for follow-up care for her and her child, and the available options for testing of the child.

Care of neonates: Babies of HIV positive mothers should be handled with gloves until maternal blood and secretions are washed off, after which time they can be handled safely by mothers and health workers. The infant should be started on daily NVP drops depending upon birth weight and the duration of the course will be decided depending on the maternal ART duration. Anaemia has been the most common complication seen in the neonate with the long course treatment of six weeks ZDV to the child. Mothers should decide on infant feeding practice before delivery and be supported in their choice. Children should be referred for long-term follow-up and for repeat testing for diagnosis of HIV infection, either by early PCR if available, or by ELISA at 15 to 18 months.

Conclusion

Timely diagnosis of HIV infection during pregnancy is important for preventing MTCT. HIV infected mothers may give birth to HIV negative babies with the help of multidisciplinary teams, composed of specialists in perinatology, infectious diseases, and pediatrics. With good antenatal care and multidisciplinary approach HIV-infected women can have good pregnancy outcome. A multidisciplinary team approach to management involving an HIV physician, experienced obstetrician, and neonatologist are essential to optimize maternal and fetal outcome.

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