Pregnancy outcome in HIV seropositive women

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ABSTRACT

Introduction: Human immuno deficiency virus, HIV-1 is now established as the primary cause of acquired immuno deficiency syndrome. HIV has had a dramatic impact on the health of women, infants and children.

Aims & Objectives: To assess the influence of HIV-1 infection on pregnancy outcomes like Intra Uterine growth retardation, Pre-term labour, Premature rupture of membranes (PROM) and Low Birthweight (LBW).

Materials & Methods: In this prospective study patients were selected from Vani Vilas Hospital attached to Bangalore Medical College in 2 years time. The patients attending the antenatal clinic of OBG Department of Vani Vilas Hospital were recruited and after a proper pre-test counseling by counselors, the informed written consent for conducting the HIV test was taken. Diagnosis of HIV seropositive was made as per the NACO guidelines.The study group comprised of 100 HIV seropositive patients. The control group comprised of 100 HIV seronegative patients. All the parturients in the study group received a single dose of Tab. Nevirapine 200 mg. at the onset of labour and the neonate received a single dose of Nevirapine calculated at 2 mg/kg body weight immediately after delivery. Demographic details, maternal and fetal outcome studied.

Results: Among the 100 HIV seropositive pregnant women, 19 of them decided to terminate their pregnancies. In this study, there were 4 cases of IUGR when compared to 2 cases in the control group. Seropositive pregnant women were found to have a higher incidence of pre-term labour (20.9%) in comparison with the seronegative (7%). The incidence of pre-labour rupture of membranes in the study was 39.5% versus 19% in the control group. Association of low birthweight in the study group was significantly high being 29.6% in the HIV positive women and 13% in HIV negative women. The study group had 4 cases of puerperal pyrexia and 2 cases of postpartum endometritis. Most of the women in the control group had an uneventful puerperium.

Conclusion: Maternal HIV infection was significantly associated with PROM, prematurity, and low birth weight. There was a trend towards a higher IUGR postpartum complications.

Keywords: HIV, pregnancy outcome, PROM, low birthweight, IUGR

INTRODUCTION

AIDS is caused by infection with HIV, a lenti virus in the retrovirus family. Two types of HIV virus have been identified, HIV-1 & HIV2, both of which are capable of causing AIDS in humans. Most of the cases of AIDS worldwide are caused by HIV-1, but HIV-2 has been found to infect individuals and leads to AIDS in certain parts of Africa[1]. HIV has a dramatic impact on the health of women, infants and children. Some studies most of which were conducted in the developing world, reported an increased risk of low birthweight and prematurity for HIV infected parturients. These findings may be explained by co-factors such as advanced maternal disease or poor nutrition.

Marleen Temmerman et al studied the impact of maternal HIV-1 infection and pregnancy outcome between 1989 and 1991 in 406 HIV-1 seropositive and 407 HIV-1 seronegative, age and parity matched pregnant women from Kenya. Maternal HIV-1 infection was associated with significantly lower birth weight and prematurity but not with small for gestational age. Postpartum endometritis was more common in HIV-1 infected women than seronegative controls[2].

Patel Madhuri et al, 2000 analysed the pregnancy outcome in HIV seropopositive women. A cohort of 116 seropositive and 150 seronegative women were followed up. It was observed that the HIV seropositive women had a higher incidence of PROM, low birth weight and preterm deliveries when compared to controls[3].

However, although other studies exclusively from developed countries report no adverse perinatal outcomes in HIV infected parturients, a recent meta analysis found a relatively weak relationship between maternal HIV infection and adverse perinatal outcomes. There are very few studies, which are conducted in India to address this issue. Hence,

further studies are needed on this burning issue for a better understanding and management of this problem, more so in South India which has a generalized high risk epidemic.

MATERIALS & METHODS:

In this prospective study patients were selected from Vani Vilas Hospital attached to Bangalore MedicalCollege. The study period was for 2 years. All the patients attending the antenatal clinic of Obstetrics and Gynaecology Department of Vani Vilas Hospital were recruited and after a proper pre-test counseling by experienced counselors, the informed written consent for conducting the HIV test was taken. Diagnosis of HIV seropositive was made as per the NACO guidelines, using rapid tests.

The study group comprised of 100 HIV seropositive patients. The control group comprised of 100 HIV seronegative patients. At enrollment, data collection included demographic, medical, obstetric and history of multiple sexual partners. All patients underwent a routine obstetric scan at around 20 weeks of gestation. Routine ante-natal care was provided.

Among the study group the possibility of Mother-to-child transmission, the available methods to reduce the transmission rate and the facilities available for the follow up of the infants and choice for termination of pregnancy if within 20 weeks of gestation was offered. Those desirous of continuing the pregnancy were followed up through ante-partum, intra-partum and 4 weeks postpartum.

All the parturients in the study group received a single dose of Tab. Nevirapine 200 mg. at the onset of labour and the neonate received a single dose of Nevirapine calculated at 2 mg/kg body weight immediately after delivery[4]. Some parturients in the study group opted for elective LSCS as they were aware of the reduced risk of mother-to-child transmission and their wishes were accepted[5]. We included patients who were willing to attend pretest counseling, informed written consent, pregnant HIV seropositive women and planning to deliver in Vani Vilas Hospital.

Women with bad obstetric history, twins and women with previous history of preterm deliveries and IUGR were excluded in our study. Demographic details, maternal and fetal outcome studied.

RESULTS :

Among the 100 HIV seropositive pregnant women, 19 of them decided to terminate their pregnancies. All the pregnant women were aged between 17 and 36 years. Around 73% pregnant women in this study group were below 25 years of age [Table 1]. In this study, there were 4 cases of IUGR when compared to 2 cases in the control group as described in Table 2. The risk of IUGR is 2.54 times more likely in seropositive than seronegative women [Table 2]. Seropositive pregnant women were found to have a higher incidence of pre-term labour (20.9%) in comparison with the seronegative (7%) [Table 3]. The incidence of pre-labour rupture of membranes in the study was 39.5% versus 19% in the control group as shown in Table 4.

Table 1: Age distribution

Age in Years	HIV Positive	HIV Negative	Significance	RR
15-19	13 (13.0)	8 (8.0)	P=0.249	1.27
20-25	60 (60.0)	80 (80.0)	P=0.003	0.64
26-30	22 (22.0)	11 (11.0)	P=0.056	1.42
> 30	5 (5.0)	1 (1.0)	P=0.212	1.69
Total	100	100		

Table 2: Intra Uterine Growth Restriction

IUGR	HIV Positive	HIV Negative	Total
Present	4 (4.9)	2 (2.0)	6
Absent	77 (95.1)	98 (98.0)	175
Total	81 (100.0)	100 (100.0)	181
Significance	P=0.410 OR=2.54 The risk of IUGR is 2.54 times more likely in sero positive than sero negative women		

Table 3: Gestational period at labour

Gestational period at labour	HIV Positive	HIV Negative	Significance
Pre term (<37	**17**	**7**	**0.006**
weeks)	**(20.9)**	**(7.0)**	
Term	61 (75.3)	82 (82.0)	0.272
Post term	3 (3.7)	11 (11.0)	0.068
Total	81	100	-

Table 4: Status of the membranes at labor

Membrane	HIV Positive	HIV Negative	Significance
Intact	46 (56.8)	81 (81.0)	-
ARWE*	3 (3.7)	-	-
PROM	32 (39.5)	19 (19.0)	χ^2=9.299, P=0.002 OR=2.77
Total	81	100	-

Association of low birthweight in the study group was significantly high being 29.6% in the HIV positive women and 13% in HIV negative women as shown in Table 5. The study group had 4 cases of puerperal pyrexia and 2 cases of postpartum endometritis . Most of the women in the control group had an uneventful puerperium [Table 6].

Table 5: Birth weight

Birth weight	HIV Positive	HIV Negative
< 2.5 kg	24 (29.6)	13 (13.0)
≥ 2.5 kg	57 (70.4)	87 (87.0)
Minimum	1.00	1.80
Maximum	4.50	5.10
Mean ± SD	2.64±0.54	2.80±0.50
95% CI	2.52-2.76	2.70-2.90
Significance	t=2.02, P=0.045	

Table 6: Post-partum period

Complications	HIV Postive	HIV Negative	Significance
Uneventful	74 (91.4)	97 (97.0)	0.114
Puerperal pyrexia	4 (4.9)	3 (3.0)	0.702
Postpartum endometritis	2 (2.5)	-	0.199
Total	81	100	-

DISCUSSION

In the present study, 100 HIV seropositive pregnant women were compared with 100 HIV seronegative pregnant women to estimate the consequences of maternal HIV infection on pregnancy outcomes. The focus for evaluation was mainly Demographic Characteristics, antepartum complications, obstetric and fetal outcome. Among the 100 HIV seropositive pregnant women, 19 of them decided to terminate their pregnancies and most of the other women in the study group were asymptomatic. The obstetric indices were comparable in both the groups. All the pregnant women were aged between 17 and 36 years. Around 73% pregnant women in this study group were below 25 years of age.

In this study, most of the women in both the groups were housewives. There was one commercial sex worker and 8 women had polygamous relationship in the study group.

These findings are in agreement with those of Newmann et al who found that 81% were housewives and 88% to be monogamous in a study in Tamil Nadu characterizing 134 HIV positive women. In recent years, married monogamous women have been identified as a population at increasing risk for HIV in India. Most of the risk factors for HIV-1 infection in our population are related to sexual risk behavior, including age at sexual debut, number of sexual partners and a history of STDs. In India, drivers and commercial sex workers are at higher risk for HIV infection than other population groups.

The occupational pattern of the husbands was analyzed and 34% of the husbands of HIV positive women were drivers. 56% of the husbands in the study group admitted to have had multiple sexual partners, whereas only 9% admitted so, in the control group. Only 6% of both the partners had polygamous relation in the study group.

Around 54% of seropositive women were detected of their sero status within 20 weeks of gestation, and around 64% of the women were found to be seropositive within 4 years of married life.In this study of 100 seropositive pregnant women, 19 of them opted to terminate their pregnancies. Therefore, 81 seropositive pregnant women were followed-up till delivery and 4 weeks postpartum in comparison with 100 seronegative pregnant women as control.

In this study, there were 4 cases of IUGR when compared to 2 cases in the control group. The risk of IUGR is 2.54 times more likely in seropositive than seronegative women.

Seropositive pregnant women were found to have a higher incidence of pre-term labour (20.9%) in comparison with the seronegative (7%), which is comparable with most other studies reported, especially from the developing countries. Temmerman et al reported that prematurity was observed in 21.1% of neonates born to HIV positive women versus 9.4% of

those born to HIV negative women[2]. Valeriane Leroy et al observed premature birth in 22.7% of infants born to HIV positive women versus 14.1% of those born to HIV negative mothers[6]. Stratton et al also observed similar findings[7].

The incidence of pre-labour rupture of membranes in the study was 39.5% versus 19% in the control group. Minkoff et al, 1990[8], Gloeb et al, 1988[9], and Patel Madhuri et al[3], 2000, also reported pre-labour rupture of membranes in seropositive women to be 31.25%, 15.4%, and 24.2% respectively. Association of low birthweight in the study group was significantly high being 29.6% in the HIV positive women and 13% in HIV negative women and was found to be similar to reports by Jane Ellis et al, 2001, viz. 29.3% vs. 16.4%[10]. Early studies by Braddick et al had reported a 3 fold increase in low birthweight in the seropositive women[11]. Kumar et al showed similar results[12]. Mean birthweight in the study group was 2.64 kg. and in the control group was 2.80 kg. The mean birthweight difference of 160 gms was comparable with the reports of various other studies. There was one intra uterine death in both the study and control group.The decision regarding the feeding option was left to the mother after proper counseling. In this study group 54% of the mothers decided to breastfeed.The study group had 4 cases of puerperal pyrexia and 2 cases of postpartum endometritis and one maternal death. Most of the women in the control group had an uneventful puerperium.

CONCLUSION

In present study most of the pregnant women were below 25 years of age and monogamous relationship. It was observed that one third of HIV womens husbands were drivers. Among the 100 HIV seropositive women 19 decided to terminate. The risk of IUGR was found to be 2.54 times more likely in seropositive women than seronegative women. The incidence of preterm delivery is significantly more in study group.The risk of PROM in seropositive women was 2.7 times compared to seronegative women. Association of low birth weight in study group was significantly high being 29.67% and 13% in control group. Postpartum complications were relatively more in study group. To conclude, maternal HIV infection was significantly associated with PROM, prematurity and low birth weight. There was a trend towards higher IUGR and postpartum complications.

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