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ANTIRETROVIRAL THERAPY AND PREGNANCY OUTCOME IN HIV INFECTED WOMEN

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ABSTRACT

Objectives: There is conflicting data on the effect of HIV infection as well as antiretroviral therapy (ART) on pregnancy outcome. The objectives of this study were to evaluate the effect of HAART on pregnancy in HIV-infected women. **Methods:** This is a prospective case record analysis of 100 HIV-infected women delivering between March 2018 to Oct 2019, in RMC, Ajmer. The pregnancy outcome in HIV-infected women who received ART for prevention of mother to child transmission as per protocol which varied during the period of study. Effect of use of ART and latest CD4 count on preterm birth (PTB) and intrauterine growth restriction (IUGR) and pre-eclampsia were analyzed. **Results:** HIV-infected women were more likely to have Pre-eclampsia, PTB and IUGR (7%, 14%, 13%). This did not reach statistical significance ($p>0.05$). Neonatal intensive care unit admissions were also significantly higher in infants born to HIV-infected women. HIV-infected women on ART had decreased incidence of Pre-eclampsia, PTB and IUGR. **Conclusion:** Good antenatal care and multidisciplinary team approach can optimize pregnancy outcomes in HIV-infected women.

INTRODUCTION

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.[1] 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.[1] 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. The published literature shows conflicting results on this.[2] The objective of this study was to compare pregnancy outcome in women with and without HIV infection. Since we are using HAART to prevent MTCT from 2010 onwards, also to evaluate the effect of HAART on pregnancy in HIV-infected women.

MATERIALS AND METHODS

This prospective study was conducted on 100 HIV reactive pregnant women attending antenatal clinics at tertiary care hospital who were reactive for HIV and who were willing to participate in this study during period of Mar 2018 to Oct 2019 was studied.

Inclusion Criteria:

- Pregnant women tested and diagnosed as HIV positive attending antenatal OPD.
- Pregnancy complicated with medical risk factors such as (PIH, renal disorders, diabetes mellitus etc.)

Exclusion Criteria:

- Women undergoing medical termination of pregnancy/abortion

Women were counseled about the benefits and risks of elective cesarean delivery and formula feeding, the majority opted for cesarean delivery and exclusive breast feeding to prevent perinatal transmission. Since the implementation of WHO B+ option, we were encouraging women for vaginal delivery and exclusive breastfeeding. At first ANC visit, HIV serostatus, haemoglobin and the syphilis rapid plasma reagin test (RPR) were assessed on finger prick collected capillary blood. In HIV-infected pregnant women venous blood was taken for CD4+T cell count and viral load determination. Women were visited monthly at the ANC clinic and were encouraged to attend the study health facility whenever they have any health complaint. A health facility-based passive surveillance system was established to capture unscheduled visits of participants during follow-up. At delivery, a sample from the mother's peripheral blood was collected for haemoglobin, CD4+T cell count; HIV viral load samples were also taken.

RESULTS

Table – 1 Correlation Of Pre-eclampsia, Preterm Delivery And IUGR With ART Intake

		ART				Total		P Value
		No		Yes				
		No of patients	%	No of patients	%	No of patients	%	
Pre eclampsia	No	15	78.90%	78	96.30%	93	93.00%	0.001 (S)
	Yes	4	21.10%	3	3.70%	7	7.00%	
	Total	19	100.00%	81	100.00%	100	100.00%	
Preterm	N	16	84.20%	70	86.40%	86	86.00%	0.803
	Y	3	15.80%	11	13.60%	14	14.00%	
	Total	19	100.00%	81	100.00%	100	100.00%	
IUGR	N	15	78.90%	72	88.90%	87	87.00%	0.24
	Y	4	21.10%	9	11.10%	13	13.00%	
	Total	19	100.00%	81	100.00%	100	100.00%	

Correlation of pre-eclampsia with ART intake was observed. Among the total 100 patients enrolled under study, 7% patients developed pre-eclampsia.

21.1% (4/19) patients developed pre-eclampsia among those who were not on ART while 3.7% (3/81) patients developed pre-eclampsia among those who were on ART. The correlation (negative) was found statistically significant (P=0.001).

Among 14% cases, preterm delivery was observed. Correlation between preterm delivery and ART intake was analyzed statistically which was not found significant (P = 0.803). Among 13% cases, IUGR was observed. Correlation between IUGR and ART intake was analyzed statistically which was not found significant (P = 0.24).

Table – 2Correlation of Fetal HIV status and CD4 count

Fetal HIV status		Latest CD4 Count						Total		P Value
		<500		500-1000		>1000				
		N	%	N	%	N	%	N	%	
1.5 month	-ve	48	96.00%	46	95.80%	2	100.00%	96	96.00%	0.95
	+ve	2	4.00%	2	4.20%	0	0.00%	4	4.00%	
	Total	50	100.00%	48	100.00%	2	100.00%	100	100.00%	
6 month	N	12	24.00%	15	31.20%	0	0.00%	27	27.00%	0.62
	-ve	38	76.00%	32	66.70%	2	100.00%	72	72.00%	
	+ve	0	0.00%	1	2.10%	0	0.00%	1	1.00%	
	Total	50	100.00%	48	100.00%	2	100.00%	100	100.00%	
12 month	N	26	52.00%	25	52.10%	0	0.00%	51	51.00%	0.59
	-ve	23	46.00%	21	43.80%	2	100.00%	46	46.00%	
	+ve	1	2.00%	2	4.20%	0	0.00%	3	3.00%	
	Total	50	100.00%	48	100.00%	2	100.00%	100	100.00%	
18 month	N	43	86.00%	44	91.70%	1	50.00%	88	88.00%	0.001 (S)
	-ve	7	14.00%	4	8.30%	0	0.00%	11	11.00%	
	+ve	0	0.00%	0	0.00%	1	50.00%	1	1.00%	
	Total	50	100.00%	48	100.00%	2	100.00%	100	100.00%	

Fetal HIV status at 1.5 months was compared with latest CD4 count. HIV was found reactive in total 4 cases. 2 of them had CD4 count <500 and 2 had 500-1000. In 2 cases the latest CD4 count measured was >1000; both of them were non-reactive for HIV. No association was established statistically (P=0.95).

No association was established statistically when fetal HIV status at 6 months and 12 months was compared with latest CD4 count.

Association was observed statistically significant (P=0.001) when fetal HIV status at 18 months was compared with latest CD4 count. Only 1 case was found to be HIV reactive at 18 months; CD4 count of whom was >1000. No HIV reactive case was found among cases having CD4 count <500 and 500-1000.

Table – 3 ART Intake Versus Fetal HIV Status At 18 Months

ART intake versus fetal HIV status		ART				Total		P Value
		N		Y				
		N	%	N	%	N	%	
1.5 month	-ve	17	89.50%	79	97.50%	96	96.00%	0.1
	+ve	2	10.50%	2	2.50%	4	4.00%	
Total		19	100.00%	81	100.00%	100	100.00%	
6 month	N	5	26.30%	22	27.20%	27	27.00%	0.11
	-ve	13	68.40%	59	72.80%	72	72.00%	
	+ve	1	5.30%	0	0.00%	1	1.00%	
Total		19	100.00%	81	100.00%	100	100.00%	
12 month	N	10	52.60%	41	50.60%	51	51.00%	0.08
	-ve	7	36.80%	39	48.10%	46	46.00%	
	+ve	2	10.50%	1	1.20%	3	3.00%	
Total		19	100.00%	81	100.00%	100	100.00%	
18 month	N	17	89.50%	71	87.70%	88	88.00%	0.08
	-ve	1	5.30%	10	12.30%	11	11.00%	
	+ve	1	5.30%	0	0.00%	1	1.00%	
Total		19	100.00%	81	100.00%	100	100.00%	

Fetal HIV status at 1.5 months was compared with ART. HIV was found reactive in total 4 cases. 2 of them were on ART and 2 were not. No significant association was established statistically (P=0.10).

Fetal HIV status at 6 months was compared with ART as depicted in above table. No significant association was established statistically (P=0.11).

Fetal HIV status at 12 months was compared with ART. HIV was found reactive in total 3 cases. 2 of them were not on ART and 1 was on ART. No significant association was established statistically (P=0.08).

Fetal HIV status at 18 months was compared with ART. HIV was found reactive in 1 case; who was not on ART. But this correlation was not found statistically significant (P=0.08).

DISCUSSION

Young et al[3] examined 166 women initiating ART in rural Uganda and concluded that women with poor nutritional status are at increased risk for LBW, preterm delivery, and composite adverse birth outcomes. In another study by Olagbuji,[4] increased incidence of IUGR, PTB, and LBW was reported in HIV-infected pregnant women on HAART.

In present study, 81% HIV seropositive pregnant females were on Anti Retro-viral Therapy and 19% were not on ART. The advantage of HAART is that it suppresses viral replication and achieves maximal viral suppression and hence lowers viral load to undetectable level, in a patient who receives intra-partum intravenous zidovudine and zidovudine syrup given to the infant for 6 weeks post-partum as proven by the PACTG 316 study.[5]

In present study, 38 had normal vaginal delivery without episiotomy, 43 had normal vaginal delivery with episiotomy and 18 cases were delivered by LSCS. 1 female had abortion. 7% of the cases under study had pre-eclampsia. Among them, 3 were on ART and 4 were not. HIV infected pregnant females on ART were observed to less likely to develop pre-eclampsia (P=0.001).

Darak et al[6] also reported that women receiving HAART had higher chances of adverse pregnancy outcomes (48%), PTB (25%), and LBW (34%) compared to women on ZDV alone (32%, 13%, and 22% respectively). Preconception HAART was significantly related to LBW children. Haeri et al[7] compared 151 HIV infected women on HAART and 302 HIV-uninfected women. They reported that smoking, drug abuse, and spontaneous PTB were more common among HIV-infected women. HIV-infected women were more likely to deliver an SGA infant, but this was due to higher tobacco and cocaine use. Neonatal outcomes were otherwise similar; HAART did not increase maternal complications.

In present study, correlation between maternal condition on discharge and ART intake was analyzed statistically which was found significant (P = 0.001) i.e., HIV reactive pregnant females on ART were found more likely to have favourable maternal condition on discharge. Maternal conditions, among 6% females were observed to be unfavourable while rest 94% females had favourable maternal conditions on discharge. Maternal condition on discharge was compared with latest CD4 counts but no association was observed in this comparison (P=0.93).

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