MATERNAL AND FETAL OUTCOMES AMONG HIV POSITIVE PREGNANT MOTHERS ATTENDING ANTENATAL CLINIC AT UNIVERSITY OF MAIDUGURI TEACHING HOSPITAL MAIDUGURI NIGERIA

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ABSTRACT

Objective: To determine the pregnancy outcome among HIV positive women attending ANC at the University of Maiduguri Teaching Hospital, Maiduguri. **Method:** A prospective cohort study of 500 women attending the ANC between 12th August 2009 – 21st December 2010 was carried out. Initial HIV screening was done using single rapid tests, while diagnosis for those found positive was done with an additional second rapid test, while confirmation is done with 'Western Blot' technique. Socio demographic and obstetrics variables were obtained and analyzed. **Results:** Out of the 500 pregnant mothers that were counseled and tested for HIV, 52 were found to be HIV positive giving a sero prevalence rate of 10.4%. The HIV positive women are used as cases while out of the remaining cohort 162 patients that are matched for age and parity were used as control. The perinatal transmission rate was 11.5%. The HIV positive women were more educated and younger than the control. More than 90% of the HIV positive women booked for ANC between 2nd and 3rd trimester with average gestational age at booking of 29.3 weeks. Elective caesarean section (ELCS) was offered to 11(21.2%) and all the babies delivered through ELCS were negative for HIV. Prematurity, low birth weight and birth asphyxia were more in HIV positive women than control. Advanced maternal age (X^2 =33.53 P =0.000), Low CD4 count (X^2=15.58 P =0.016), high maternal viral load (X^2=21.85 P =0.005), prematurity (*X2= 9.872* P= 0.007), low birth weight *(X^2 = 63.80 P*= 0.000) and birth asphyxia(*X^2 = 24.149 P*= 0.000) were the major determinants of perinatal transmission of HIV infection in this study. **Conclusion**: The Seroprevalence and MTCT of HIV infection in pregnancy is high in our environment. HIV infection was also found to be associated with increases risk of elective caesarean section and neonatal asphyxia. Efforts should be intensified to improve the situation.

Keywords: HIV, Maternal Outcome, Fetal Outcome, Maiduguri

INTRODUCTION

Since the report of the first HIV/AIDS case in Nigeria, in a 13 year old girl in 1986, the rate of the infection increases rapidly,[1] with the national Sero-prevalence among pregnant women attending ANC rising from less than 1% in 1990 to 5.8% in 2001.[2] A slight downward trend has been observed in the last four surveys with a sero prevalence rate of 5.0% 4.4%, 4.6% and 3.4% in 2003, 2005, 2008 and 2013 respectively.[3,4]

The burden of HIV is higher in sub-Saharan

Africa than the rest of the world because of the high level of heterosexual transmission, high female to male ratio, and high total fertility rate (TFR), and high prevalence of breast feeding.[5]

HIV infection has been reported to have little effect on pregnancy outcome in the developed world.[5-8]However, adverse pregnancy outcome have been reported in a number of African studies.[9-12.] These complication rates vary across studies and may reflect the extent of the epidemic and the nature of HIV – related diseases in different communities. Untreated maternal HIV infection was observed to be associated with adverse pregnancy outcomes in form of increased maternal and fetal morbidities. Most common complications reported were, maternal anaemia, preterm labour, premature rupture of membranes, abortions, IUGR, IUFD, low birth weight, still birth and increase risk of perinatal transmission of HIV. [13-17]

The objective of this study therefore is to determine the maternal and fetal outcome of pregnancies complicated by HIV.

METHOD

This was a prospective hospital based cohort study that was carried out at the department of Obstetrics and Gynaecology of the University of Maiduguri Teaching Hospital from 12th August 2009 – 21st December 2010 after approval was granted by the research and ethical committee of the hospital.

Five hundred (500) pregnant women were recruited using convenient sampling technique as the study population. After counseling, the HIV testing (VCT) was offered to the study participants using the opt-out method. All study participants were tested after obtaining informed consent and emphasis was placed on confidentiality, benefit of the test and were informed that they are free to opt out or withdraw from the study at any point if they so wish. Those women found to be positive were used as cases and 162 of those negative were randomly selected and used as control. These women were followed up through delivery and up to the first 12 weeks post partum to obtain their pregnancy outcome including the status of their babies.

A pretested questionnaire was used to obtain the socio demographic and Obstetrics data of the study population. The information obtained were coded, entered into a computer and analysed using SPSS version 11 statistical package (SPSS, Chicago, Ill, USA).Test of significance was done using Chi square test. A p-value of <0.05 was considered to be significant.

The diagnosis of HIV infection was made in two stages i.e. the initial screening using Rapid tests" determine" (revised serial method) which detects antibodies to HIV using latex agglutination. For those found positive with determine a second rapid test "stat pak" was used for the diagnosis ,where these two test were found to be discordant a 'tie breaker (third rapid test) using 'Unigold' was done. The rapid tests were all carried out in the ANC clinic and the results are available within 30 minutes.

Those found positive were confirmed with 'Western Blot' technique. This was done in the main immunology laboratory of the Hospital. Patients who tested positive by western blot were offered post test counseling and enrolled in to the PMTCT programme to continue their ANC follow up according to the national protocol,[4] while negative mothers were offered post test counseling on how to remain negative and continue with their routine ANC follow up. According to the Nigerian national guideline 2007[3] in addition to the normal criteria for initiation of ART in adults infected with HIV, pregnancy constitutes an indication for ART prophylaxis. Treatment is offered as per the WHO clinical staging and eligibility

criteria.[3] Mothers who are not eligible for their own disease are offered prophylaxis with Highly Active Antiretroviral therapy (HAART) and exposed infants received single dose nevirapine suspension 2mg/kg within 72 hours of birth and Zidovudine 4mg/Kg twice daily for six weeks.

The infants of the HIV positive mothers were followed up to first 12 weeks of age to determine their HIV sero status using polymerase chain reaction (PCR) after separation amplification and reading using the PCR machine (Amplicor HIV -1 DNA Assay version 1.5 ,Roche molecular system USA). An infant is considered HIV positive if the PCR is reactive for viral DNA at 0, 6 and/or 12 weeks of age.

RESULTS

Out of the 500 pregnant mothers that were counseled and tested for HIV; 52 were found to be HIV positive giving a Sero prevalence rate of 10.4%. The mean age was 28.6±6.6 (16 – 41 years) and the mean parity was 3.2±2.0.

Table 1 illustrates the socio demographic characteristics of the two groups. The peak age specific incidence (38.5%) of HIV was in the 25-29 year age group (p=0.01).However there was no statistically significant incidence differences between the two groups in the other age groups. There were significantly fewer primigravidas 4(7.7%) among the HIV positive pregnant mothers than HIV negative 36 (22.2%) (p = 0.04). Overall more of HIV negative mothers were less educated compared to HIV positive mothers (p = 0.001).

Sixteen (30.8%) of HIV positive pregnant women were known HIV patients receiving treatment and care at the adult ARV clinic before transfer to the ANC for antenatal care, while the remaining 36(69.2%) were new HIV positive diagnosed at booking in the antenatal clinic. Fourty eight (92.3%) of the HIV women booked for ANC between 2nd and 3rd trimester with average booking gestational age of 29.3±2.4 weeks.

The Obstetrics performance of the HIV infected and uninfected pregnant mothers were compared as shown on table 2. There was no statistically significant difference in terms of ANC complications, gestational age at delivery and postpartum complications among the two groups. Anaemia and preterm labour were each observed among 3 (5.8%) of the infected mothers. Spontaneous onset of labour was observed among 39 (95.1%) of those HIV infected and 147 (90.7%) of those uninfected, while induction of labour was done to 2 (4.9%) of the infected and 15 (9.3%) of the uninfected mothers. Only 2 HIV infected mothers were offered episiotomy compared to 45 of those uninfected (P = 0.000). Elective caesarean section was offered to 11(21.2%) compared to none among the uninfected with p < 0.001, while spontaneous vaginal delivery occurred among 39(76.9%) and 153(94.4%) with p = 0.005.

Table 3 detailed the fetal outcome among the two groups. There was no statistically significant difference between the two groups in respect to fetal survival at birth, fetal sex, and fetal weight. Fetal APGAR at 5th minutes of birth revealed mild asphyxia among the HIV infected mothers of 17 (32.7%) compared to 6(3.7%) of uninfected pregnant mothers p < 0.001.

Of the 52 babies delivered by the HIV positive mothers, 6 were found to be HIV positive both by PCR 1 & 2 at 0, 6 and/or 12th week of birth giving a transmission rate of 11.5%.

Table 1: Socio demographic characteristics of the 52 HIV infected and 162 uninfected control among the study population

Parameters	HIV positive	%	HIV negative	%	P value
Age					
<20	2	3.8	12	7.4	0.42
20-24	10	19.2	4829.6	0.21	
25-29	20	38.5	27	16.7	0.01
30-34	11	21.2	4829.6	0.31	
35-40	8	15.4	18	11.1	0.52
>40	1	1.9	95.6	0.33	
Total	**52**	**100**	**162**	**100**	
Education					
Nil	9	17.3	78	48.1	0.001
Primary	13	25.0	21	13.0	0.11
Secondary	18	34.6	33	20.4	0.10
Post secondary	6	11.5	15	9.3	0.70
Tertiary	6	11.5	15	9.3	0.70
Total	**52**	**100**	**162**	**100**	
Gravidity					
Primigravida	4	7.7	36	22.2	0.04
2-4	27	51.9	84	51.9	0.99
5-7	20	38.5	39	24.1	0.11
≥8	1	1.9	3	1.9	0.98
Total	**52**	**100**	**162**	**100**	
Gest.age at booking					
1st trimester	4	7.7	6	3.7	0.37
2nd trimester	29	55.8	105	64.8	0.34
3rd trimester	19	36.5	51	31.5	0.58
Total	**52**	**100**	**162**	**100**	

Table 2: Obstetrics performance of the 52 HIV infected and 162 uninfected Control

ANC complications	HIV infected	%	Uninfected	%	P value
Nil	45	86.5	150	90.5	0.31
Anaemia	3	5.8	3	1.9	0.29
Preterm labour	3	5.8	0	0	0.07
IUGR	1	1.9	0	0	0.31
Malaria	0	0	103	63.8	0.17
UTI	0	0	3	1.9	0.37
Total	**52**	**100**	**162**	**100**	
G/age at delivery					
Preterm	6	11.6	6	3.7	0.13
Term	44	84.6	147	90.7	0.34
Post term	2	3.8	9	5.6	0.68
Total	**52**	**100**	**162**	**100**	
Onset of labour					
Spontaneous	39	95.1	147	90.7	< 0.001
Induced	2	4.9	15	9.3	<0.001
Total	**41***	**100**	**162**	**100**	
Duration of labour					
Normal	40	97.6	153	94.4	<0.001
Prolong	1	2.4	9	5.6	< 0.001
Total	**41***	**100**	**162**	**100**	
Intrapartum intervention					
Episiotomy: Yes	2	3 .8	45	27.8	<0.001
No	50	96.2	117	72.2	<0.001
Total	**52**	**100**	**162**	**100**	
Mode of delivery					
SVD	40	76.9	153	94.4	0.005
Elective C/S	11	21.2	0	0	0.000
Emergency C/S	1	1.9	3	1.9	0.98
Ass.vag. delivery	0	0	6	3.7	0.16
Total	**52**	**100**	**162**	**100**	
Postpartum complications					
Nil	48	92.3	156	96.3	0.38
Peuerperal pyrexia	3	5.8	3 1.9	0.29	
Anaemia	1	1.9	31.9	0.10	
Total	**52**	**100**	**162**	**100**	

* 11 of the patients had elective c/s hence N= 41

Table 3: fetal outcome among the 52 HIV infected and 162 uninfected control

Fetal survival	HIV infected	%	HIV uninfected	%	P value
Alive	51	98.1	162	100	0.31
Still birth	1	1.9	0	0	0.31
Total	**52**	**100**	**162**	**100**	
Fetal APGAR					
Normal apgar	31	59.6	156	96.3	<0.001
Mild asphyxia	17	32.7	6	3.7	<0.001
Moderate asphyxia	3	5.8	0	0	0.07
Total	***51**	**100**	**162**	**100**	
Fetal sex					
Male	27	51.9	84	51.9	0.99
Female	25	48.1	78	48.1	0.99
Total	**52**	**100**	**162**	**100**	
Fetal birth weight					
Normal weight	45	86.5	156	96.3	0.07
Low birth weight	7	13.5	6	3.7	0.07
Total	**52**	**100**	**162**	**100**	

* N= 51 HIV infected 1 was a still birth

DISCUSSION

The HIV Seroprevalence rate found among the study population is 10.4%, which is similar to 11.8% and 10.5% reported from the same institution in 2003[17] and 2004[18] respectively. Our findings though within the range of 1.2% - 12% reported in most states of Nigeria[3], is however higher than the national Seroprevalence rate of 3.2% reported in 2013[4]. Other Hospital based studies from Nigeria have equally reported much lower prevalence rates[1319] compared to our finding.

Previous studies have documented that HIV is common among young and those of low parity.[20,22, 23] This study also showed that HIV positive mothers were significantly younger and of lower parity. This is likely so because of the ethnicity and cultural peculiarities of the study population in which early marriage is common.[4] Our study revealed that HIV positive mothers were less likely not to have western education than their negative counterparts. This is in contrast to a report from Kigali, Rwanda among Antenatal clinic attendants.[21] With low literacy level our women tend to marry early compared to their educated counterparts who are of liberal mind increasing their risk opportunity for infection. Also our women are not courageous enough to negotiate for sex because of our cultural sensitivities.

Although there isn't much significant difference in antenatal complications among the two study group, anemia was observed to be commoner among HIV positive mothers than HIV negative ones. Several investigators[19, 21, 24 - 28] have reported higher prevalence of anemia among HIV positive pregnant women than HIV negative and can be because of the effect of the virus or the drugs used to treat the virus.. The low episiotomy rate of 3.8% found in this study is in conformity with the Nigerian national guideline to minimize intrapartum interventions that increase the risk of perinatal transmission.[3]

Elective caesarean section though not a popular method of preventing perinatal transmission of HIV in developing countries[29], was offered to 21.2% of our patients, this is similar to reported in Makurdi[30] (21.7%), but much higher than 10.3% reported from Kano[13], Nigeria. The justification for the high elective caesarean section rate in his study was informed by the recommendation that this option of delivery should be offered to some HIV positive mothers in our environment to prevent mother to child transmission of HIV.[23] All the babies delivered through elective caesarean section were found to be HIV negative, hence the choice of this mode of delivery by their mothers was a wise decision aim at preventing transmission of HIV to their neonates. A much larger trial have also advocated elective caesarean section as an effective way to minimize perinatal transmission of HIV particularly for those with detectable viral load.[31-33]

Several studies have previously established that HIV-1 infection in pregnancy is associated with prematurity and low birth weight. [19, 26, 34-36]Though the difference in birth weight was not statistically significant between the two study groups, babies born to HIV positive mothers were found to weigh less than those of HIV negative mothers with mean of 2.87kg and 3.43kg respectively.

The high prevalence of mild birth asphyxia found among the cases in this study is in agreement with earlier reports in some parts of Nigeria.[19, 20, 26] This may be attributed to general reservation to avoid unnecessary intrapartum interventions and fetal manipulations that are presume to increase the risks of perinatal transmission of HIV.

CONCLUSION

The Seroprevalence and Mother to Child Transmission (MTCT) of HIV are high in our environment. HIV infection was also found to be associated with increases risk of elective caesarean section and neonatal asphyxia. Efforts should be intensified to improve the situation.

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