

Pregnancy Outcome in HIV Seropositive Women Booked at a Tertiary Healthcare Institution in South Eastern Nigeria

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ABSTRACT

Background: *The Human Immunodeficiency Virus (HIV) pandemic remains a major public health issue in developing countries with the prevention of mother to child transmission (PMTCT) being a key challenge. Various reports have been published on the effect of HIV on pregnancy with conflicting results.*

Objective: *This was to determine the effect of HIV infection on pregnancy outcome among women booked for antenatal care at Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi to provide a baseline for further studies.*

Methods: *This is a retrospective study of cases of HIV in pregnancy managed between 1st January, 2006 and 31st December 2007, at NAUTH, Nnewi.*

Results: *Out of a total of 2,960 pregnant women booked for ante-natal care within the study period and a sero-prevalence rate of 10.5% was noted. Two hundred and fifty patients were included in the study. The majority, 170 (68%) of the patients were between 21-29 years and the majority also, 148 (59.2%) were of low parity (0-2). Only 181 (72.4%) of the patients had an entry CD4 count of = 500/ml. All the patients were on Highly Active Antiretroviral Therapy (HAART) during the pregnancy. Maternal complications were encountered in 176 (70.4%) cases, anaemia being the commonest, 100 (40.0%). The commonest foetal complications were stillbirth, 26 (10.4%) and low birth weight 54 (21.6%). Sixty three (25.2%) of the women had puerperal complications. There was no maternal or perinatal death.*

Conclusion: *The HIV sero-prevalence rate among pregnant women booked for antenatal care at NAUTH, Nnewi was high, but the effect of HIV on pregnancy was very minimal.*

Key words: *pregnancy outcome, HIV sero-positive, booked women*

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INTRODUCTION

The HIV and AIDS pandemic is one of the serious health challenges in the world today, especially in the developing countries. Sub-saharan Africa has continued to bear the greatest burden of this epidemic accounting for approximately 63% of the total number of people living with HIV/AIDS¹.

Since the first case of AIDS was reported in a 13-year old girl in Nigeria in 1986, the epidemic has continued to rise at an alarming rate, with national HIV sero-prevalence rate rising from 1.8% in 1991 to 5.8% in 2001 with a drop to 4.4% in 2005¹. Over 90% of infections in children are acquired through mother-to-child transmission² (MTCT) and as more women contact the virus, the number of infected children has been growing. In 2006 alone, an estimated 2.3 million children were living with HIV and up to 530,000 were infected annually worldwide, with sub-Saharan Africa accounting for about 90% of these figures¹. Hence, the challenges for the obstetrician practicing in Africa is not only to reduce the rate of transmission among our women but more importantly, to reduce the rate of mother to child transmission.

Mother-to-child transmission can occur during pregnancy, labour and delivery as well as during breastfeeding. The risk of MTCT is generally estimated at 15-40% in the absence of intervention with higher estimates in the developing world especially Africa³⁻⁶.

The increased burden of PMTCT in Africa is because of the high levels of hetero-sexual transmission, high prevalence of HIV in women of reproductive age group, high total fertility rate, and high rate of prolonged breastfeeding and poor access to effective intervention aimed at preventing MTCT. Also poverty, ignorance and stigma are implicated. Poverty impedes the establishment of needed prevention, care, support and treatment programmes for HIV infected women⁷. At the current HIV prevalence/transmission rate, if appropriate interventions are not implemented, about 100,000 babies will be infected through MTCT¹.

Pregnancy makes a good entry point to the diagnosis and management of HIV infection. Without pregnancy, most people would have been presenting at the late stage of the disease due to symptoms. The Nigerian National goal for PMTCT as contained in the 2003 AIDS policy is to reduce the transmission of the HIV through MTCT by 50% by the year 2010 and to increase access to quality HIV counseling and testing services by 50% by the same year⁸. Interventions to achieve this target include routine counseling and testing, use of

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Antiretroviral Therapy (ART), safer obstetric practices and modified infant feeding practices. Owing to the medical problems associated with immunocompromised state, concerns have been raised about the effect of HIV infection on the course and outcome of pregnancy. These may include infectious morbidities, anaemia, intrauterine growth restrictions and death as well as early pregnancy losses.

In a study in Nigeria, sero-positivity amongst pregnant women was significantly associated with recurrent vulvovaginitis, positive syphilis serology, perineal tear, postpartum haemorrhage, puerperal infection, birth asphyxia and increased perinatal mortality with no difference in the incidence of low birth weight and congenital abnormality^{9,10,11}. Another report from Abeokuta, Nigeria showed an association between HIV infection in pregnancy with birth asphyxia and a high perinatal mortality rate¹². With the establishment of PMTCT programme in Nigeria, as more HIV sero-positive women are encouraged to embark on pregnancy, it is necessary to review, not only the success of PMTCT interventions but to also audit the pregnancy outcome in this obstetric population. This study aims to determine the pregnancy outcome of HIV sero-positive women who booked for antenatal care (ANC) at Nnamdi Azikiwe University Teaching Hospital, Nnewi over a two-year period (1st January, 2006 to 31st December, 2007).

METHODS

The list of 310 HIV sero-positive pregnant women who booked and were managed at NAUTH, Nnewi over the study period was compiled. Relevant information were extracted from PMTCT-ANC, labour ward and PMTCT delivery registers, and case notes.

Exclusion criteria include women that booked later than 28 weeks of gestation, and women who booked but did not deliver at the facility.

Data on age, parity, entry CD4 count, mode of delivery, birth weight, and pregnancy related maternal and fetal complications including the puerperium were collected. The data was then analyzed using EPI info version 2006 statistical package. The results were presented in frequency tables and percentages.

RESULTS

A total of 2,960 pregnant mothers who were booked during the period under review had counseling and testing for HIV. Three hundred and ten (10.5%) of these women tested positive. However, only 250 case files were analyzed for this study. Table I, showed the age distribution of the patients. The majority of the patients, 170(68%) were at the peak of their reproductive ages (20-29 years). The parity distribution of HIV sero-positive mothers is also shown on table I. The majority of the patients 148 (59.2%) were of low parity (para 0-2). The majority, 210 (84%) of the patients had secondary school level of education, while 28(11.2%) and 12 (4.8%) attained tertiary and primary education respectively. The majority of the mothers, 181 (72.4%) had their entry CD4 count of $\geq 500/\text{mm}^3$. Sixty (24.0%) had entry CD4 count of between 200-499/ml and only 9 (3.6%) had CD4 count $< 200/\text{ml}$. All the patients were on HAART namely Nevirapine, Zidovudine and Lamivudine combination as first line drugs used at the center.

Table II showed all the pregnancy associated complications of HIV. The commonest was anaemia, 100 (40.0%) followed by malaria, 27 (10.8%). Puerperal complications were encountered in 63 patients (25.2%) with breast engorgement 50 (20.0%) being the commonest (table II).

The mode of delivery of these patients was mainly spontaneous vertex, 210 (84.0%). The rest included caesarean section, 30 (12.0%), instrumental delivery, 10 (4.0%). Table III showed various indications for which caesarean section was performed with cephalopelvic disproportion (CPD), being the commonest indication, 12 (40.0%). Twenty-six (10.4%) of the pregnancies were complicated by stillbirth, while 54 (21.6%) of the babies were of low birth weight as shown on table IV. Neonatal complications were found in only 12 neonates (4.8%), the commonest being neonatal conjunctivitis, 5 (2.0%) [table IV]. There was no maternal or neonatal death.

Two hundred (80.0%) of the women chose breast milk substitute for infant feeding, while the rest did exclusive breastfeeding. All the babies delivered by the exposed mothers tested positive to HIV antibody at birth.

ANALYTICAL TABLES**Table I: Age and Parity Distribution of Patients**

Variable	No.	%
Age Group		
< 20	12	4.8
21 – 29	170	68.0
30 – 39	68	27.0
Total	250	100.0
Parity		
0	76	30.4
1	72	28.8
2	36	14.4
3	28	11.2
4	22	8.8
= 5	16	6.4
Total	250	100.0

Table II: Pregnancy-Associated and Puerperal Complications in the Patients

Variable	No.	%
Pregnancy- associated complications		
Anaemia	100	40.0
Malaria	27	10.8
Miscarriages	18	7.2
Preterm delivery	12	4.8
Vulvovaginal candidiasis	8	3.2
Antepartum haemorrhage	4	1.6
Upper respiratory tract infection	3	1.2
Pulmonary tuberculosis	2	0.8
Pre -eclampsia	2	0.8
No complication	74	29.6
Total	250	100.0
Puerperal complications		
Sepsis	6	2.4
Mastitis	3	1.2
Breast engorgement	50	20.0
Secondary PPH	4	1.6
No complication	187	74.8
Total	250	100.0

Table III: Indications for Caesarean Section

Indications	No.	%
Poor progress of labour	5	16.7
CPD	12	40.0
Fetal distress	6	20.0
2 previous c/s	4	13.3
Failed induction	3	10.0
Total	30	100.0

Table IV: Neonatal and Delivery Outcome

Variable	No.	%
Birth weight (kg)		
< 1.5	18	7.2
1.5 – 2.4	36	14.4
2.5 – 4.0	182	72.8
> 4.0	14	5.6
Total	250	100.0
Delivery outcome		
Live baby	224	89.6
Stillbirth	26	10.4
Total	250	100.0
Neonatal complications		
Neonatal sepsis	3	1.2
Neonatal conjunctivitis	5	2.0
Neonatal jaundice	4	1.6
No complication	238	95.2
Total	250	100.0

DISCUSSION

All the 2,960 pregnant mothers who booked in our center during the study period had counseling and free testing for HIV. This in general showed the adequacy, effectiveness of the counseling program in the center. It also showed that women complied with and understood the importance of counseling. Similarly, the recommended approach by the Federal Ministry of Health which is routine counseling and testing of all pregnant women with option of opting out (which has been adopted in NAUTH) may have contributed to the high rate of acceptance.¹ This finding is in contrast to the high rate of absconding from testing after counseling as was reported by Ojukwu and Ibekwe in Abakaliki, Nigeria¹⁰, Offiong et al in Abuja, Nigeria¹³ and Ogu et al in Port Harcourt, Nigeria¹⁴.

The HIV seropositive rate in this study was high (10.5%), when compared to the national average of 4.4% as reported in the sentinel surveillance of 2005⁸. This report may be slightly higher than the true prevalence rate in the state since the study was carried out in a teaching hospital which is a referral center and also a PMTCT treatment center for the region. Other reported HIV sero-positive prevalence among pregnant mothers in Nigeria include 5.3% in Ebonyi state¹⁰, 8.3% in Abuja¹⁵, 6.0% in Kaduna¹⁵ and 2.7% in Calabar¹⁶. Different sero-positivity / transmission rates occurring in different cities and countries could be due to different studies and methods and the different rates of patients' exposure to the risk of HIV infection¹⁷

Our study showed that the sero-positivity rate was highest in the age group 20 - 29 years and the majority of the mothers (59.2%) were of low parity (0-2). These women were just beginning their reproductive career. The implication of this finding is that most of their children are at the risk of being infected with HIV if necessary preventive measures are not put in place. This underscores the need for effective and wider PMTCT coverage in our sub-region in particular and Africa in general where fertility rate is very high.

The high rate of acceptance of PMTCT of HIV noted in this study could be due to the community awareness and level of education of the women in our zone. Most (95.2%) of the sero-positive mothers attained secondary education and above. This is in contrast with the Ebonyi State study where the majority of the sero-positive mothers were housewives and petty traders with little or no formal education.

The majority (72.4%) of sero-positive mothers had their entry CD4 count = 500copies/ml. This could explain the good obstetric outcome seen in the study. Studies have shown that HIV positive pregnant mothers presenting with HIV related condition and complications usually had CD4 count of less than 200copies/ml¹⁸. Again, all the women in this study were on HAART prophylaxis. This is due to the fact that most of them booked early in the pregnancy, and had the opportunity of receiving HAART which is the best regimen for the prevention of mother to child transmission of HIV¹. In addition, NAUTH is one of the centers where ante-natal care, including antiretroviral (ARV) drugs and delivery are offered to HIV sero-positive mothers at no cost.

Various pregnancies adverse outcomes have been attributed to HIV in pregnancy including increased incidence of spontaneous abortion, preterm delivery, intrauterine growth restriction and low birth weight^{19,20}. These complications were related to advanced disease state. In a study done in South Africa, maternal HIV infection in pregnancy was associated with a significantly lower haemoglobin level, increased abnormal vaginal discharge, intra uterine growth restriction, preterm delivery and low birth weight.²¹ The increased rate of HIV related maternal morbidity and mortality was attributed to the absence of accepted practical guidelines for the management of HIV in pregnancy. In this study, although various maternal and fetal complications were noted, their prevalence was not more than those reported in the same area^{23,24}.

The most prevalent maternal complication noted was anaemia in pregnancy (Hb < 11g %) which was found in (40.0%) of the mothers. Adinma JIB et al²² in 2002,

reported 35.5% incidence of anaemia in pregnancy in the same center. Dim and Onah reported 40.4% in Enugu²³. Malaria in pregnancy was the second highest maternal complication noted in our study (10.8%). This is below 22.1% prevalence reported in Northern Nigeria²⁴ and for normal pregnant women in Nnewi, Nigeria²⁵. The lower prevalence is not surprising since all the women were on intermittent preventive therapy for malaria. Other maternal complications as shown on Table II were not high.

The fetal complications noted in this study include stillbirth (10.4%) and low birth weight (21.6%). There is need for a case control study in these two areas to determine their significance.

The mode of delivery of sero-positive mothers was mainly spontaneous vertex which was noted in 210 (84.0%) of the patients. This is not surprising since all the patients were on HAART. Again, there is serious aversion for caesarean section in our environment. Most women when given the option will choose vaginal delivery even when there is risk. Caesarean section was indicated in 12% of the sero-positive mothers and the main indication was cephalopelvic disproportion. Evidence has shown that caesarean section has no advantage over vaginal delivery when the viral load is low as shown by high CD4 count in our patients²⁶.

Breast engorgement was the highest puerperal complication noted in this study (20%). This is not surprising considering the fact that 80% of the sero-positive mothers used breast milk substitute for infant feeding and therefore had to contend with breast engorgement and pains. There was no maternal or neonatal death in the study and only 12 (4.8%) of the sero-positive neonates had complications, all of which were minor.

The sero-positive rate of 100% at birth was noted in the babies of sero-positive mothers in this study. This is usually so because of the vertical transmission of IgG antibodies. Studies have shown that all the children born to HIV positive mothers test positive to HIV antibodies at birth and for 12 - 18 months thereafter^{1,27}. Follow up study is therefore needed to identify the actual number of infants who were infected through vertical transmission. Polymerase Chain Reaction test (PCR) which detects viral antigen is very useful for early detection.

In conclusion, this study demonstrates a high HIV seroprevalence rate among pregnant women that booked for ante-natal care at NAUTH, though the effect of HIV on pregnancy outcome was minimal. This could be due

to use of antiretroviral (ARV) drugs and accessibility of PMTCT services in the center. Continued effort is needed to scale up PMTCT services for a wider coverage to many centers in the country.

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