Incidence of HIV among Pregnant Women Attending Ante-Natal Clinic in General Hospital Kaltungo, Gombe State, Nigeria

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Research Article

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ABSTRACT

Sero-prevalence diagnosis of HIV among six hundred and ninety-one (691) pregnant women attending antenatal Clinic in General Hospital Kaltungo was carried out from the month of December, 2011 to May, 2012. Blood samples obtained from pregnant women of different age groups, social and economic status were screened using Abbott determine rapid test strip. Out of the 691 sera collected, 65 (9.4%) were HIV sero-positive. The prevalence rate was 15 in 15-24 years age group, 45 in 25-34 age group and 5 in 35 years and above. This result indicates highest incidence rate among age group 25-35 years which is a sexually active age group. Chi square analysis at 5% confidence level revealed that at 2 degree of freedom age plays a role in the prevalence rate. Actions should therefore be taken to prevent mother to child transmission and also control the spread of the infection.

Keywords: Sero-prevalence, chi square, age group, sera, infection.

INTRODUCTION

Acquired Immune Deficiency Syndrome (AIDS) is a highly lethal condition that presents patients with severe systemic opportunistic infections and certain types of tumors. Up to 20% of Human Immunodeficiency Virus (HIV) seropositive persons develop AIDS within a period of five years. The average incubation time appears to be three years, however, long term prospects of HIV infection are still unknown (Rajesh and Rattan, 2004).

The virus attack and gradually destroys cells that are responsible for immunological competence rendering the individual vulnerable to infection from different agents (WHO, 2009). The clinical description and serological evidence of HIV and AIDS infection have been identified retrospectively among people who die in Europe, North America and Africa as far back as 1950s (Sepkowitz, 2001). Upon infection with this virus, symptoms may not be significant, rather, flu-like or fever-like symptoms may be observed for a short period of time for the first three (3) months during which antibodies are not yet produced. This period is referred to as the period of sero-conversion and it could be extended to six (6) months depending on the individuals (WHO, 2009).

According to reports from the World Health Organization in 2006, the infection is a pandemic with a total number of 39.5 million people currently infected worldwide. From this figure, 2.2 million people below the age of 15 are living with the virus. Furthermore, it was estimated that 4.3 million people were infected, out of which 530,000 cases are below 15 years (WHO, 2006). It was also estimated that HIV had claimed over 25 million lives making it one of the most destructive pandemic ever recorded in history.

In Africa, more than 60% of people living with HIV (PLH) live in Sub-Saharan Africa, giving a total of 2.8 million new cases (WHO, 2001).

Studies conducted in Nigeria revealed 2.6 million people were infected, out of which 1.6 million are women of childbearing age between 15-49 years (Bawa, 2005). It is necessary to screen pregnant women on ante-natal visit in order to check the scourge and prevent mother to child transmission (MTCT). To this effect, this paper is aimed at determining the incidence of HIV among women of childbearing age attending antenatal at General Hospital Kaltungo, Kaltungo Local Government Area, Gombe State, Nigeria.
MATERIALS AND METHODS

Study Area

This research was carried out at General Hospital Kaltungo, Kaltungo Local Government Area, Gombe State, Nigeria for a period of six months (Dec., 2011-May, 2012). The Local government is located between Latitude 9°48’51”N and Longitude 11°18’32”E with a population figure of 149,805 people (National Population Census, 2006).

STUDY POPULATION

The study population for the research were women of childbearing age attending antenatal at General Hospital Kaltungo. Purposive sampling technique was used for the selection of the study population. A total of six hundred and ninety one samples from the study subjects were collected and analyzed for presence of antibody against Human Immunodeficiency Virus (HIV).

INCLUSION CRITERIA

Subjects selected for this study were women of childbearing age attending antenatal at Kaltungo General Hospital, who have consented and are willing to participate in the research.

BLOOD SAMPLE COLLECTION

Blood samples were collected by a trained nurse using the venipuncture technique. A soft tubing tourniquet was fastened on to the upper arm of the subject to enable the index finger feel a suitable vein. The puncture site was then cleaned with methylated spirit and venipuncture was made with the aid of a needle attached to a 5ml syringe, after which 2mls of blood was collected and transferred into a labeled ethylene-diamine-tetra-acetic acid (EDTA) container.

Test Procedure

The kit used was Determine HIV-1/2 (Abbott Laboratories, II, USA) product code 7D23-33. The test is an invitro immune chromatographic (lateral flow) test for the qualitative detection of antibody to HIV I and II in human serum, plasma or whole blood.

The sera collected were arranged in a rack with each sample appropriately labeled. By folding and tearing at perforated points, the desired numbers of strips are removed and arranged on the work bench.

With the aid of sterile micro pipettes, 2 drops of the serum was dropped on the test pad and allowed to migrate to the patient line and site, the preparation was allowed to stand on a flat surface for 15 minutes and the result read. Negative and positive controls were set up along with the test according to manufacturer’s instruction (NCCLS, 1993).

Principle of the Test

Determine HIV I and II is an immune chromatographic test for the qualitative detection of antibody to HIV I and II. When serum/plasma is added to the sample pad, the samples migrate through the conjugate pad; it constitutes and mixes with the selenium colloid antigen conjugate. This mixture continues to migrate through the solid phase to immobilized recombinant antigen and synthetic peptides at the patient’s window site. If antibodies to HIV I and II are present in the sample, the antibody binds to the antigens selenium colloid and to the window site forming a red line (positive) at the patient’s window site, but if antibodies to HIV I and II are absent the antigens selenium colloid flows past the patient’s window site and no red line is formed at the patient’s window site (NCCLS, 1993).

Resulting Interpretation

The result was interpreted according to manufacturer’s instructions as follows:
Red lines in both control window and patient’s window was interpreted as positive result (indicating presence of HIV II antibody and I) while one red line in the control window and patient’s window was interpreted as negative result. Absence of red line on control window as well as patient’s window site renders the test result invalid.

**DATA ANALYSIS**

The data generated were entered into SPSS Software Version 16.0 and used for descriptive analysis, Chi square($X^2$) and analysis of variance (ANOVA) to test for association and significant difference respectively. All tests were done at $P = 0.05$

**RESULTS**

Six hundred and ninety-one blood samples were collected from pregnant women attending General Hospital Kaltungo, Gombe State for a period of six months (Dec., 2011-May, 2012). From the analysis conducted, 65(9.4%) were positive while 608(88.0%) were HIV sero-negative and 18(2.6%) were invalid as shown in Table 1. The overall incidence of HIV among sero positive pregnant women population was 65(9.4%).

The incidence of HIV sero-positivity for the period of study, i.e. December –May, 2012 is shown in table 2. Where from the month of December, 13(11.6%) were positive while 99(88.4%) were negative. For the month of January, 5(5%) were positive while 95(95%) were negative. For the month of February, 12(12%) were positive while 88(88%) were negative. For the month of March, 9(9%) were positive while 91(91%) were negative. For the month of April, 10(8.2%) were positive while 112(91.8%) were negative. For the month of May, 16(10.2%) were positive while 141(89.8%) were negative.

The incidence of HIV sero-positive cases based on age group showed that for age range between 15-24years, 3 were positive, for age range 25-34 years, 9 were positive and from 35 years and above, 1 was positive for the month of December. While for the month of January, in age group between 15-24years, 2 were positive, for age group 25-34years, 2 were positive and from 35 years and above one was positive. Also, for the month of February, in age group between 15-24 years, 3 were positive, 25-34years, 8 were positive and from 35 years and above, 1 was positive. In March, within the age range of 15-24years, 2 were positive, for age group 25-34years, 7 were positive and from 35 and above, none was positive. For the month of April, between the age range of 15-24years, 1 was positive, and for age range 25-34years, 9 were positive and from 35 years above, none was diagnosed positive. Finally, for the month of May, between age range of 15-24years, 4 were positive, age range 25-34years, 10 were positive and from 35 years and above, 2 were positive as shown in Table 3.

The overall incidence of HIV sero-positivity based on age group is shown in Table 4. HIV sero-positivity was highest for age group 25-34 yrs (45) and lowest for age group 35 years and above (5).

**Table 1:** Total incidence of Human Immunodeficiency Virus (HIV) Sero-positivity among pregnant women attending General Hospital Kaltungo, Gombe State

<table>
<thead>
<tr>
<th></th>
<th>Positive</th>
<th>Negative</th>
<th>Invalid</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>65(9.4%)</td>
<td>608(88.0)</td>
<td>18(2.6%)</td>
<td>691(100%)</td>
</tr>
<tr>
<td>Key:</td>
<td>+ = positive, - = negative, % = percentage, &gt;=greater than</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 2:** Incidence of HIV sero-positivity from the month of December, 2011- May, 2012

<table>
<thead>
<tr>
<th></th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>March</th>
<th>April</th>
<th>May</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>13(11.6%)</td>
<td>5(5%)</td>
<td>12(12%)</td>
<td>9(9%)</td>
<td>10(8.2%)</td>
<td>16(10.2%)</td>
</tr>
<tr>
<td>Negative</td>
<td>99(88.4)</td>
<td>95(95%)</td>
<td>88(88%)</td>
<td>91(91%)</td>
<td>112(91.8)</td>
<td>141(89.8%)</td>
</tr>
<tr>
<td>Total</td>
<td>112</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>122</td>
<td>157</td>
</tr>
</tbody>
</table>
Table 3: Incidence of HIV sero-positive cases by age group from Dec. – May, 2011-2012

<table>
<thead>
<tr>
<th>Age range(yrs)</th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-24</td>
<td>3(20%)</td>
<td>2(13%)</td>
<td>3(20%)</td>
<td>2(13%)</td>
<td>1(7%)</td>
<td>4(27%)</td>
<td>15(100%)</td>
</tr>
<tr>
<td>25-34</td>
<td>9(20%)</td>
<td>2(4.4%)</td>
<td>8(18%)</td>
<td>7(16%)</td>
<td>9(20%)</td>
<td>10(22.2%)</td>
<td>45(100%)</td>
</tr>
<tr>
<td>&gt;35</td>
<td>1(20%)</td>
<td>1(20%)</td>
<td>1(20%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>2(40%)</td>
<td>5(100%)</td>
</tr>
<tr>
<td>Total</td>
<td>13(20%)</td>
<td>5(7.6%)</td>
<td>12(18.4%)</td>
<td>9(14%)</td>
<td>10(15.3%)</td>
<td>16(25%)</td>
<td>65(100%)</td>
</tr>
</tbody>
</table>

Table 4: Incidence of HIV sero-positivity and sero-negativity based on Age group

<table>
<thead>
<tr>
<th>Age range (yrs)</th>
<th>Positive (+)</th>
<th>Negative (-)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-24</td>
<td>15</td>
<td>216</td>
<td>231</td>
</tr>
<tr>
<td>25-34</td>
<td>45</td>
<td>327</td>
<td>372</td>
</tr>
<tr>
<td>&gt;35</td>
<td>5</td>
<td>83</td>
<td>88</td>
</tr>
<tr>
<td>Total</td>
<td>65</td>
<td>626</td>
<td>691</td>
</tr>
</tbody>
</table>

Table 5: $X^2$ test association between Age and HIV sero-positive among pregnant women attending General Hospital Kaltungo

<table>
<thead>
<tr>
<th>Age range</th>
<th>Observed Frequency</th>
<th>Expected frequency</th>
<th>$(O-E)^2$/$E$</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-24</td>
<td>15</td>
<td>21.72</td>
<td>2.07</td>
</tr>
<tr>
<td>25-34</td>
<td>45</td>
<td>34.99</td>
<td>2.86</td>
</tr>
<tr>
<td>&gt;35</td>
<td>5</td>
<td>8.27</td>
<td>1.29</td>
</tr>
<tr>
<td>Total</td>
<td>65</td>
<td>64.98</td>
<td>6.22</td>
</tr>
</tbody>
</table>

Key: O=Observed values, E=Expected values, >=Greater than

DISCUSSION

The incidence of HIV infection in pregnant women is of grieve consequence to the offsprings as over 50% of babies born to HIV positive mothers are HIV positive. An estimated 53% of pregnant women living with HIV in the developing world, Nigeria inclusive receive antiretroviral drugs to prevent them from transmitting the virus to the babies.

From the total number of samples screened, it was observed that about 9.4% were HIV positive: this result is reasonably high and corresponds with similar results obtained from research conducted by National Agency for Control of AIDS (WHO, 2010). NACA’s result showed that Nigeria accounts for around 10% of the global HIV burden, this figure is not surprising because, as at 2011, the then Nigerian Minister of Health acknowledged the extent of the challenge in controlling the infection when he stated that “HIV and AIDS epidemic in Nigeria remains a public health problem of enormous magnitude that must be given priority attention”.

It was also observed that the infection was more prevalent among pregnant women within the age group 25-35 years (45 out of 65 positive cases). This findings also corresponds with the findings of Menakeya (1999). This result is also not surprising because members of this age group are sexually active and makes up about 70% of the total number of pregnant women worldwide. The high prevalence rate among this age group may also be as a result of the polygamous nature and extramarital lifestyle of their partners thus making them vulnerable to HIV infection. Another important reason for this high prevalence rate might also be due to culture and tradition: the issue of wife
inheritance which is usually practiced in most African settings can also play a major role in the spread of this infection. The result also revealed that the incidence of HIV sero-positivity is not associated with season or months as demonstrated statistically (ANOVA), indicating that there is no specific season or month in which persons are most susceptible to acquiring the infection.

Incidence of sero-positivity seems to be static (see table 3) i.e. no serious increase or decrease even though preventive and control measures have been put in place by Government to curb the scourge. Therefore, there is still much work to be done with respect to prevention and control of the infection.

CONCLUSION AND RECOMMENDATION

The incidence of HIV and AIDS is a serious public health issue and this research has revealed that it is a problem in Kaltungo local Government area of Gombe State. Results from Chi square analysis revealed that age plays a major role in the infection rate: therefore, there is need to device a means of preventing and controlling the infection. These measures should also target the most affected age group which is 25-35 years.

For effective control and prevention of HIV and AIDS, the following recommendations should be considered;

1. Government should ensure that primarily prevention of HIV and AIDS among women of reproductive age is given priority, with services related to reproductive health such as antenatal care.
2. Provision of appropriate counseling and support to women living with HIV and AIDS to enable them make informed decision about their future reproductive life, with special attention on preventing unintended pregnancies.
3. Proper HIV testing and provision of antiretroviral drugs that will help pregnant women and prevent mother to child transmission of the virus during pregnancy, delivery and breastfeeding.
5. Religious authorities should be mandated to encourage effective screening of intending couples before marriage.
6. Married couples should remain faithful to their partners and sexual abstinence should be advocated for the un-married.
7. Traditional practices that expose people to infection should be discouraged.

REFERENCES
