Prevalence of Couple Human Immunodeficiency Virus (HIV) Discordance, and Prevention of New HIV Infection in the Negative Partner in Enugu, South-East Nigeria

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Abstract

Background: A large number of cohabiting HIV discordant couples do not know each other’s HIV status. The negative partners are unknowingly very vulnerable to HIV infections in such settings.

Objectives: To determine the prevalence of HIV discordance among cohabiting couples in Enugu, review the literature on their health challenges, and discuss how to prevent new HIV infection in the negative partners.

Methods: This was a retrospective study. The Couple HIV Testing and Counseling (CHTC) register in Enugu State University Teaching Hospital; Enugu was evaluated from October 31, 2012 back to January 1, 2009. Relevant data was analyzed using Excel 2007 software, and presented in percentages.

Results: A total of 387 (i.e. 774 sexual partners) couples accessed the CHTC. Twenty eight (28/774, 3.6%) partners opted out while 746 (746, 96.4%) were tested. One hundred and nineteen (119/737, 31.9%) couples were discordant, 185 (185/737, 49.6%) were concordant negative, while 69 (69/737, 18.5%) were concordant positive. Eighty one (81/119, 68.1%) of the discordant female partners tested positive while 38 (38/119, 31.9%) males tested positive.

Conclusion: Many cohabiting couples in Enugu were HIV discordant. The HIV positive female partners were about twice the HIV positive male partners. The HIV negative partners in such health challenging settings are vulnerable to new HIV infections, and need protection to remain negative.

Keywords: HIV; Couple; Discordance; Vulnerable Negative Partners; Enugu; Nigeria

Background

A large number of cohabiting HIV discordant couples do not know each other’s HIV status. The negative partners are unknowingly very vulnerable to HIV infections in such settings, and most of the negative partners do not know how to protect themselves [1-7].

High incidences of new HIV infections in the negative partners have been reported in Zambia and Rwanda. HIV deoxyribonucleic acid sequencing researches in Uganda and Zambia confirmed that 64% and 87% of the new infections in the negative partners were respectively from the HIV positive cohabiting partners [8,9]. High viral load is usually associated with high rate of HIV transmission [10]. Other risk factors associated with HIV transmission in heterosexual discordant couples include lack of male circumcision, [11] the presence of other sexually transmitted infections, [12,13] ignorance of self or partner’s HIV status and limited understanding of HIV discordance within couples [7]. Majority of the HIV transmissions among couples or sexual partners can be prevented with effective interventions like CHTC and condom use [4], rights-focused behavior changes, prompt sexual transmitted infection screenings and treatments, male medical circumcision, [11] antiretroviral treatment as prevention, [14] and Pre- and post-exposure prophylaxes (PrEP and PEP) [15]. Preventative vaccines and functional cure will be the ideal methods of the prevention when they become available for clinical use. The benefits of adequate suppression of viral replication with highly active antiretroviral therapy (HAART) in the positive partner are enormous, and include reduced risk of infecting the negative partner, safer conception, prevention of mother to child HIV transmission, increased marital cohesion, reduced partner violence, decrease morbidity and mortality in the HIV positive partners. This study assessed the prevalence of HIV discordance among couples who accessed CHTC in Enugu, and we reviewed the literature on new HIV infection preventions and other health challenges among HIV discordant couples.

Justification

The HIV negative partners in HIV discordant couples relationships are at very high risks of becoming infected with HIV and they need protections. Knowing the prevalence of HIV discordance in such setting, creating awareness on how to protect them and help them meet their health needs are of critical importance. No such research has been reported in this study population. It gives insight into the magnitude of HIV discordance and the cost implications of adopting the current World Health Organization (April 2012) [14] guidelines on the use of antiretroviral drug-based intervention as HIV treatment as prevention in such discordant relationship.

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Subjects and Methods

Enugu State University Teaching Hospital (ESUTH) Enugu is a state owned health institution that became a teaching hospital in June 2006. The institution started providing comprehensive HIV services in January 2009. A trained couple nurse counselor provided the pre-test couple counseling to couples who access the daily HIV testing and counseling services in the hospital. Couples who accepted the test were tested by the laboratory scientist in the small laboratory attached to the special clinic. Rapid serial HIV antibody testing technique was used in the laboratory. Client blood sample was screened for HIV antibodies with determine reagent. A positive test result was then confirmed with another reagent like Un-Gold before the client was declared HIV positive. The HIV test results were released the same day to the couples through the couple nurse counselor who provided post-test counseling. The discordant HIV negative couples were counseled to remain negative through rights-focused behavioral changes and the elimination of risk behaviors identified during the counseling. The discordant HIV positive couples were counseled and referred to the appropriate clinics for continuation of care. Discordant couples were counseled on how to protect the negative partners while trying to meet their own health challenges and the need for regular follow up assessments. Positive discordant partners whose CD4 counts were less than 500 were started on HAART. Treatment as prevention is not yet the protocol in our setting because of several constrains.

Inclusion and Exclusion Criteria

Couples or sexual partners who had HIV pre- test and post-test counseling and were tested were included in the study. Couples who opted out and clients without their sexual partner were excluded from the study.

Ethical clearance was obtained from the ESUTH ethical committee when the study was about to commence. The authors funded the research and we have no competing interests to declare.

Results

Table 1 showed that 774 sexual partners were counseled for CHTC. Twenty eight (3.6%) sexual partners (i.e. 14 couples) opted out while 746 (96.6%) were tested. Majority of the clients were of age 20-30 years 386 (49.9%), Christians 750 (96.9%), and urban residents 618 (79.8%).

Figure 1 and Table 2 showed the outcomes of the couple HIV tests. One hundred and eighty five (185/373, 49.6%) of the couples were concordant negative, 69 (69/373, 18.5%) were concordant positive while119 (119/373, 31.9%) were discordant. Eighty one (81/119, 68.1%) of the discordant female partners tested positive while 38 (38/119, 31.9%) males tested positive.

Discussion

The prevalence of HIV discordance among heterosexual couples in this study is 31.9%. Several studies in Sub-Saharan Africa have shown similar high prevalence rates of HIV discordance as in this study [6,16]. The rates, however, ranged from 2% in Rwanda to 13% in Zimbabwe and Lesotho in a population-based study [3]. It can be as high as 75% in some countries [17]. In Nigeria 7.7 to 78.8% of HIV positive antenatal attendees have HIV negative partners [16]. The HIV negative partners in such discordant relationships are at critical risks of becoming infected. Women are twice more vulnerable than men in such relationship [5]. About 68.1% of the females in this study were the positive partner while 31.9% were males. The high prevalence of HIV couple discordance in this study may be because the study was a hospital-based study.

Discordant couples are significant sources of new HIV infections in Sub-Saharan Africa. The rate of HIV transmission in discordant heterosexual partners ranged from 10% in Kenya to 56% in Rwanda [18]. The risk of HIV transmission is reported to be between 20 to 25% per year [2,4]. It depends on coital frequency (1 in 500 contact) [19], high viral load [10],and the presences of sexual transmitted infections and opportunistic infections [12,13].

The discordant couples have a lot of health challenges, and needs...
that can make them take high risk behaviors. These needs include:
to have a satisfying sexual life, safer conception, desired pregnancy,
uninfected children, treatment for infertility, contraception to prevent
unwanted pregnancy and screening for cancers. The discordant couples
can meet some of these needs with effective interventions that reduce
the risks of infecting the HIV negative partner. These interventions
include CHTC and identification of at risk negative partner, correct
and consistent use of condoms, male medical circumcision, PrEP and
PEP, use of HAART as treatment as prevention on the positive partner
to protect the negative partner. Sperm washing, sperm donations and
assisted reproduction technology are other options.

Correct and consistent use of the condoms have been reported to
reduce the rate of HIV transmission from 20-25% to 3-7% [3,4]. Male
medicinal circumcision was effective in reducing HIV transmission
by 38-66% [11,20]. PrEP with oral tenofovir are known to reduce
transmission by 67% and 75% when combined with emtricitabinem as
truvuada [15].

Conception is a serious issue in a discordant relationship and a
common cause of unsafe sexual risk behavior. Correct and consistent
use of condoms, sexual transmitted infections and opportunistic
infections treatments, and early initiation of highly antiretroviral
therapy for maximal suppress viral replication before attempting to
conceive are strategies that can be employed to reduce the risk of HIV
transmission in such situation.

Safer conceptions can be achieved when the woman is positive and
the man is negative through artificial insemination with the negative
husband’s sperm [21]. Another option is timed unprotected intercourse
during ovulation when the woman on HAART had undetectable viral
load [22]. PrEP and PEP can also be given to the man before and after
the exposure [14].

When the woman is negative and the man is positive, safer
conceptions can be achieved by sperm donation from a negative male.
When this option is not acceptable, sperm washing and intrauterine
insemination are safe and effective risk reduction methods. PrEP and
PEP can be offered to the HIV negative woman before and after the
timed unprotected intercourse during ovulation when the positive man
has had maximal viral suppression with highly antiretroviral therapy.

Limitations of the Study

The study was a retrospective hospital-based study and the couple
HIV discordant prevalence rate may be higher than population-based
studies. The serial HIV antibody screening test could give false negative
or positive results.

Recommendations

HIV testing and counseling services should be encouraged to
practice testing of sexual partners or groups of sexual contacts, and
giving out the same day results to encourage mutual disclosure of
partners’ status, identify and protect negative partners from acquiring
new HIV infections.

Conclusions

A large number of cohabiting couples are HIV discordant.
The negative partners in such settings are very vulnerable to HIV
infections. Sexual risk behaviors and unsafe sex can be under taken
when the discordant couples are trying to satisfy their sexual desire and
achieve desired pregnancy. This study discussed the available treatment
options for the discordant couples to meet their needs at reduced rate
of infecting the negative partner.

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