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Prerequsite result of routine human immunodeficiency virus serology among infertile women before assisted reproduction technology

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Abstract

Background: Sexually transmitted diseases such as Human Immunodeficiency Virus (HIV) which causes or induces incurable fatal infections have been transmitted through Assisted Reproduction Technology and from infected mothers to the fetus or new born. **Aim:** The aim of this study is to determine the prevalence of this chronic viral agent among infertile women recruited for Assisted Reproduction Technique programme in Benin City, Nigeria. **Materials and Method:** Sera (serum) from Five hundred and Ninety infertile women attending Human Reproduction Research Programme/In-vitro fertilization Center at University of Benin Teaching Hospital were screened for the presence of Human Immunodeficiency Virus antibody using three algorithm or techniques of Determine, Unigold and Stat Pack kits. The age range of the infertile women was 20-49 years. **Result:** 28 (4.7%) out of Five Hundred and fifty infertile women recruited for Assisted Reproduction Technique and screened for Human Immunodeficiency Virus antibody were seropositive with increase in prevalence of 10. 0%, 8.5% and 7.5% among infertile women in age groups of (20 – 24), (25 – 29)yrs and (30 – 34)yrs. Chi-square statistical analysis of data shows insignificance in seroprevalence rate in relation to the number of infertile women screened ($P > 0.0001$) but the screening of these infertile women for the presence Human Immunodeficiency Virus should continue due to the attendant effects. **Conclusion:** Infertile women who are Human Immunodeficiency Virus carriers give a new dimension to assisted reproductive techniques. This will no doubt help to prevent further spread and adverse pregnancy outcome.

Keywords: Human immunodeficiency virus, HIV, serology, infertile women and assisted reproduction technology.

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Introduction

The goals of microbial screening of infertile women enlisted for Assisted Reproduction Technique (ART) are three fold viz to discover the etiology of past infertility to provide a prognosis for further infertility and to obtain a successful pregnancy for both mother and fetus.

Sexually transmitted diseases and among them viruses have always pre-occupied teams practicing medically Assisted Reproduction but mainly as a threat that should be avoided as much as possible. One of the viral infections that is heading the list is Human Immune Virus (HIV). This viral agent which may cause or induce other incurable often fatal infections have been transmitted through Assisted Reproductive Technique and insemination procedures and can be transmitted from infected mothers to the fetus or new born [1]. Most infected women are in their reproductive years and it is quite likely that they will continue to want and to have children [2]. This tendency may rise as medical treatment is becoming increasingly effective. Although there is good

evidence that pregnancy does not affect early progression of Human immune virus disease [3]. Its effect in maternal health in women with advance disease in less certain [4] studies of asymptomatic women have most shown an increase in risk of obstetric implications and adverse perinatal outcome [5]. Assisted Reproduction Techniques such as In Vitro Fertilization, Intracytoplasmic Sperm Injection (ICSI) or Intra Uterine Insemination (IUI) are increasingly being used to treat couple or infertile women. Beside the well established prognostic factor for success such as age of the woman, the hyperstimulation protocol used, the number and quality of transferred embryos, the factors such as contamination and transmission of infection can also impinge on the success rate of Assisted Reproduction Techniques programme. The European Society of Human Reproduction and Embryology recommend the screening of both partners for Human Immunodeficiency Virus before any Assisted Reproduction Techniques are started.

This prospective study is designed to determine the prevalence of this chronic viral agent among infertile women recruited for Assisted Reproduction Technique programme in Benin City, Nigeria. This will no doubt help to prevent further spread and adverse pregnancy outcome.

table 1:

Materials and Methods

4 mL of venous blood was collected from each of the infertile women into plain container to obtain sera (serum) from the five hundred and ninety infertile women attending fertility clinic at Human Reproduction Research Programme/In-vitro Fertilization Centre at the University of Benin Teaching Hospital, Nigeria from June 2007 to May 2009 to aspirate the serum for the presence of human immunodeficiency virus antibody. All the women opted for medically Assisted Reproduction Technology or Technique for their infertility treatment. They were subjected to initial comprehensive medical interview including family history past medical life, sexual and social history present as past marriage status and gynecological problems by the clinician. The antibody to human immune virus serology status was carried out on each of the patient serum using three algorithms namely Determine, Stat Pak and Unigold Screening procedures. These kits were products of Global and Chembio diagnostics, USA, with optimum performance, specificity and sensitivity. In this study human immunodeficiency virus antibody was performed after counseling each of the women by the human immunodeficiency virus test counsellors attached at the Center and according to the Nigeria law governing Assisted Reproduction Technology.

Statistics Study

Chi-square statistical analysis was used to evaluate the level of significance of the seroprevalence rate in relation to the number and age of the patient screened. The age range of the infertile women was 20-49 years. The *P* value is $P > 0.0001$.

Results

28 (4.7%) out of the five hundred and ninety infertile women recruited for Assisted Reproduction Technology programme were seropositive for the antibody to human immunodeficiency virus with increase in prevalence of 10.0%, 8.5% and 7.5% among age groups of (20-24) years, (25-29) years and (30-34) years, and 5.3% each for age groups of (35-39) years and (45-49) years respectively with the lowest prevalence recorded against infertile women in age group of 40-44 years (Table 1).

Some of the infertile women who were positive for the virus decided against Assisted Reproduction Technology treatment and were subsequently advised and counseled to visit the infection control unit of the hospital. They were also advised about safe sex in subsequent contact with their partners. Though the rate of infection or prevalence of human immunodeficiency virus among the five hundred and ninety infertile women was statistically insignificant ($P>0.0001$),but the screening of human immunodeficiency virus among them as a prerequisite should be a continuous exercise (Table 2).

Table 1 age classification of infertile women screened for human immunodeficiency virus.

Age(yrs)	No. Exam	No. Positive	% Positive
20-24	10	1	10.0
25-29	40	3	7.5
30-34	82	7	8.5
35-39	114	6	5.3
40-44	176	5	2.8
45-49	168	6	5.3
Total	590	28	4.7

Table 2 Socio characteristic of infertile women enlisted at HRRP/IVF Centre within the period under study.

Age range	20-49
Primary Infertility	312 (60.9)
Secondary Infertility	200 (39.1)
Duration of Infertility	1-20yrs
Miscarriages	109 (21.3)
Skilled	278 (54.3)
Unskilled	234 (45.7)
Urban	290 (56.6)
Rural	222 (43.4)
First Marriage	212 (41.4)
Second Marriage	300 (58.6)

Discussion

Serological test for human immunodeficiency virus among the infertile women in the study recorded 4.7%. This infection rate is similar to 3.5-6% obtained in some African Countries [8]. In a first group of human immunodeficiency virus seropositive women seen in Brussels, severe ovarian dysfunction in the form of premature ovarian failure or ovarian resistance to stimulation was astonishingly frequently observed [6]. Even if the size of the sample was too small to come to any conclusion, it could be a field for further investigation, especially since Clark and coworkers [6] suggested the

same observation in a retrospective analysis of a sera of 52 infertile women. An African study demonstrated reduced fecundity (significantly fewer pregnancies and fewer live births than controls) in a group of healthy women screened for human immune virus during pregnancy and unaware of their seropositive status [7].

In some women, menstruation disturbances were described in advanced stages of AIDS or low CD4+ counts [7] while normal menstrual patterns were described in United Kingdom and United States studies independently of their CD4+ levels [8, 9]. Some authors described increased amenorrhea frequency and delayed menstruation in human immune virus seropositive women regardless of their CD4+ count [9].

Transmission of human immunodeficiency virus during sexual intercourse through vaginal penetration is extremely variable [10, 11]. Whereas transmission is relatively low in stable couples (non-transmission over extremely long periods is reported), very effective transmission during casual sexual relations has been described [12]. Numerous factors are known to explain these variations, such as the infectiousness of the viral strain, the degree of advancement of the disease, the viral load, and the sex of the infected partner, the existence of associated sexually transmitted diseases and the nature of sexual practices [13]. The risk of contamination by sexual contact in a stable couple is between 0.1 and 0.5% [14], much lower than that connected with occasional intercourse, as in the case of prostitution.

Conclusion

Infertile women who are human immunodeficiency virus chronic carriers give a new dimension to assisted reproductive techniques. The teams have to adapt to the patient's stimulating views on risk and risk management in contrast with a society that is clinging to the 'no risk' myth. These patients, chronically confronted with life and death issues, having various cultural backgrounds and life experiences.

Indirect observation suggest that women carriers of human immunodeficiency virus viruses may have reduced fertility potential, infertile couples should be advised that transmission of human immunodeficiency virus in assisted reproductive techniques is possible but the magnitude of the risk is unknown, but additional work is necessary to explore this field and understand the influence of chronic viral infection such as human immune virus on the reproductive function.

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