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Full Length Research Paper

Chlamydia Infection and Infertility: Any Relationship The Lagos State University Teaching Hospital Experience

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Chlamdyia trachomatis having been recognized as a sexually transmitted pathogen has also been associated with infertility. 50 women with infertility (both primary and secondary) and 50 women matched for age attending the Postnatal Clinic were studied. Endocervical swabs and venous blood were collected from each of the subjects. Both samples were subjected to laboratory investigations for Chlamydia trachomatis IgG and IgM antibodies Result: All patients were negative on Endocervical swab for Chlamydia; however 32.1% of the infertile had positive chlamydia assay whilst 21.3% of the control had. It was also found out that patients with positive Chlamydia assay are 1.747 times at risk of infertility compared with patients with negative assay.
Conclusion: Prior Chlamdia trachomatis infection constitutes a risk factor for infertility in this environment.

Keywords: Infertility, Relationship, Chlamydia Infection, hospital Experience

INTRODUCTION

Chlamydia infection has been described as the most prevalent sexually transmitted bacteria infection worldwide.Gdouru R et al.(2008) Chlamydia is a non motile, obligate intracellular organism.Opaleye AA et al. (2003) It includes the agents of trachoma, lymphogranuloma venerum, urogenital disease and inclusion conjunctivitis. Isibor JO (2005), Hossein Rashidi et al.(2009), Chlamydia infection gives less severe symptoms than other sexually transmitted diseases such as that produced by the Gonococcus bacteria. Abida Malek (2005). This phenomenon allows the infection to go unnoticed till secondary or tertiary symptoms develop with far reaching consequences especially in the female. Hamdad-Dooudi F.(2004). These far reaching consequences include acute salpingitis and pelvic inflammatory disease .Acute salpingitis and pelvic inflammatory disease are two major known factors in the pathogenesis of female infertility. Oloyede AO et al(.2009). In most developing countries infertility results from tubal occlusion caused by pelvic infection particularly from sexually transmitted diseases. Pospil L.((2004) Oloyede AO (2009)0. It has also been shown that prevalence of Chlamydia infection is higher in women with multiple sexual partners . Black C (1997)

Infertility is a major health problem in Nigeria with a prevalence of between 20 and 40% compared with global prevalence of 15% Okonufua (2005)12 It is thus obvious that geographical variations exist in the prevalence of the pathology. Studies investigating association between chlamydia and infertility for a large cosmopolitan city like Lagos are few. .

. Tubo-peritoneal factors have been suggested to be the commonest cause Pospil (2004). This study was designed to assess the prevalence of Chlamydia infection amongst infertile patients at the Lagos State University Teaching Hospital and determine its significance as a

risk factor for infertility in this environment.

SUBJECT AND METHODS

This study was conducted between January and March 2010 in patients attending the infertility clinic at gynaecological unit of the Department of Obstetrics and Gynaecology of the Lagos State University Teaching Hospital. Approval for the protocol was given by the research and ethics committee of the hospital. Fifty patients with diagnosis of infertility with abnormal hysterosalpingograhy results seen at the gynaecological clinic were randomly selected. and matched against 50 women who were attending postnatal clinic 6 weeks after delivery. All patients were counseled and the study protocol was explained to them and those who consented were recruited.. The first part of the study involved the administration of questionnaires which carried information on age, marital status, occupation, duration of infertility, marriage type-mono or polygamy, educational status, blood group, genotype, parity, age at first sexual intercourse (AFSI), number of partners from AFSI, previous sexual infection, type of sexual infection, type of medication used for previous sexual infection, previous surgery, type of previous surgery done by two of the authors on the study subjects

Taking Endocervical Swab

Two sterile swabs contained in plastic shaft were used per patient by the attending clinician. The first swab was used to clean off excess mucus while the second was rubbed over the endocervical cells in the cervical canal to collect samples for assay. The Chlamydia trachomatis antigen detection kit produced by Biomil Diagnostic was used.

Blood Chlamydia Antibody Samples were analysed at the departmental laboratory.

2ml of venous blood was taken for each patient and analysed using the Eliza kit produced by Diagnostic Automation Chlamydia IgM Purified Chlamydia trhachomatis antigen is coated on the surface of microwells. Diluted patient serum is added to wells and the Chlamydia trachomtis IgM specific antibody if present binds to the antigen. All unbounded materials are washed away. After adding enzyme conjugate, it binds to the antibody-antigen conjugate,. Excess enzyme conjugate is washed off and TMB Chromogenic Substrate is added. The enzyme conjugate catalytic reaction is stopped at a specific time. The intensity of the colour generated is proportional to the amount of IgM specific antibody in sample. The results are read by a microwell reader compared in a parallel manner with calibrator and controls.

Statistical Analysis

A total number of 100 patients were considered in the course of the statistical analysis. Data were analysed using SPSS version 16.0 (Statistical Package for Social Sciences, Inc., Chicago III); a computer software. Descriptive and inferential statistics were applied in the course of analysis Proportions and percentages were calculated for categorical variables. Descriptive statistics (minimum, maximum, mean, and standard deviation) were applied.. Pearson's Chi-square test (a non-parametric inferential statistical procedure) was used to assess relationships and statistical significance between categorical variable. Student's t-test was used to assess the significant difference among means of continuous parametric variables. P-values less than 0.05 were considered to be statistically significant (95% confidence level).

Odds ratio was used to assess whether age≥35 years, AS genotype, more than 1 sexual partner, previous STI, previous surgery, or exposure to Chlamydia trachomatis increases the likelihood of having infertility.

RESULTS

Prevalence of Chlamydia trachomatis using Chlamydia assay in infertile patients was 32.1%. None of the patients or control had chlamydial antibody in the cervical specimens.

The mean age of the infertile women was 33.51 ±5.19 years; while the postnatal patients had a a mean age of 32.48 ± 4.48 years. T (74)=0.906, p=0.368 (two tailed)

The stratification of the subjects by marital status and husbands' occupational status. is shown on Table I Occupational status of husbands had no significant impact on fertility.

The mean duration of marriage amongst the infertile women was 5.34 ± 4.35 years; while it was 4.11 ± 3.47 years for the fertile women. Table I T(89) = 1.475, p= 0.144 (two tailed). Table I depicts the educational status of the patients

The number of sexual partners from the age of first sexual exposure is shown in Table 2. The mean number of partners amongst the infertile women was 2.42 ± 1.21. while it was 1.81 ± 0.85 amongst the fertile women T (91) = 2.743, p= 0.007 (two tailed).

Previous sexual infection was significantly more prevalent amongst the infertile women Then $\chi 2$ (1) =6.396, p = 0.014 (two tailed) Table 3. Multivariate analysis of factors associated with infertility shows that, though patients with age ≥ 35 years are 1.071 times at risk of infertility compared with patients less than 35 years, this was not statistically significant. Patients with more than one sexual partner were 2.049 times at risk of infertility compared with patients with one sexual partner while a history of previous sexual infection put the women 3.753 times at risk of infertility compared with patients with no history of sexual infection and this was statistically significant Table 4.

Patients with positive Chlamydia assay were found to be1.747 times at risk of infertility compared with patients with negative Chlamydia assay, though not statistically significant

DISCUSSIONS

The primary aim for conducting this study was to determine the prevalence of Chlamydia infection in infertile patients;. This was found to be 32%. This is higher than that obtained by Azenabor and Eghafona at Benin City.Azenabor (1993) but compared favourably with that of Lawrence O. Omo-Aghoja et al. (2007). Tukur et al. reported a prevalence of 38.3% in a study of 120 patients with tubal infertility. Tukur et al.(2006)

Though many authors have demonstrated the evidence of the association between Chlamydia infection and infertility Abida Malik (2005); no statistically significant association has been found in this study. It has been suggested that the difficulty in making a definitive

Table 1. Educational status of patients

	Infertile patients	Fertile patients
Primary	1 (2.0%)	1 (2.3%)
Secondary	15 (30.6%)	12 (27.3%)
Tertiary	53 (67.3%)	31 (70.5%)
Distribution of Age	Infertile patients	Fertile patients
21-25 years	0 (0.0%)	1 (3.0%)
26-35 years	15 (34.9%)	12 (36.4%)
31-35 years	15 (34.9%)	12 (36.4%)
36-40 years	10 (23.3%)	7 (21.2%)
≥41	3 (7.0%)	1 (3.0%)
Marital Status	Infertile patients	Fertile patients
Married	48 (96.0%)	44 (97.8%)
Single	2 (4.0%)	1 (2.2%)
occupational status of husband	Infertile patients	Fertile patients
Skilled workers	30 (56.6%)	30 (63.8%)
Semi skilled workers	7 (13.2%)	4 (8.5%)
Unskilled workers	6 (11.3%)	4 (8.5%)
Not currently working	0 (0.0%)	1 (2.1%)
Duration of marriage (years)	Infertile patients	Fertile patients
<3years	16 (34.0%)	21 (47.7%)
3-9years	22 (46.8%)	17 (38.6%)
≥ 10years	9 (19.1%)	6 (13.6%)
Educational status of patients	Infertile patients	Fertile patients
Primary	1 (2.0%)	1 (2.3%)
Secondary	15 (30.6%)	12 (27.3%)
Tertiary	53 (67.3%)	31 (70.5%)

Table 2. Number of partners from Age of First Sexual Intercourse

	Infertile patients	Fertile patients
1	13 (26.0%)	18 (41.9%)
2	16 (32.0%)	17 (39.5%)
3	11 (22.0%)	6 (14.0%)
4	8 (16.0%)	2 (4.7%)
5	1 (2.0%)	0 (0.0%)
≥6	1 (2.0%)	0 (0.0%)

diagnosis of the precursor pelvic inflammatory disease (PID) may be responsible for the disparity observed in various studies. Marian J. Currie and Francis Bowden(2007)

Patients with previous sexual infection were found to be 3.753 times at risk of infertility compared with patients with no previous sexual infection. This correlation was found to be statistically significant and as reported by Marian J. Currie and Francis J. Bowden might be an indirect indication of previous probable Chlamydia infection since the questionnaire did not specify the organism involved in the earlier reported sexually transmitted infections.

However the fact that patients with positive Chlamydia assay though found to be1.747 times at risk of infertility compared with patients with negative Chlamydia

Table 3. Previous sexual infection

	Infertile patients	Fertile patients
Yes	16 (30.2%)	6 (12.8%)
No	27 (50.9%)	38 (80.9%)

Table 4. Multivariate analysis of factors associated with infertility

Factor	OR	P-value	Confidence interval
Age of patient(≥35years)	1.071	0.888**	0.4-2.8
AS patient	0.395	0.065**	0.1-1.1
>1 sexual partners	2.049	0.108**	0.9-4.9
Patient with previous sexual infection	3.753	0.014	1.3-10.8
Patient with previous surgery	0.444	0.058**	0.2-1.0
Patient with positive Chlamydia assay	1.747	0.227**	0.7-4.3

**Odds ratio (OR) not significant at 95% confidence level

assay,the difference was not statistically significant to infer that that those infections were chlamydial and other pathogens might have been responsible.

Though it can be inferred that anybody who is sexually active is at risk for Chlamydia infection, , patients with more than one sexual partner are 2.049 times more at risk of infertility and more likely to be infected as found in this study .

The fact that the Endocervical swabs in both patients and control was negative shows that we were not dealing with active genital Chlamydia infection and probably supports the view that prior chlamydia exposure was the real predisposing factor to tubal infertility.

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