

## Original Article

Prevalence of *Trichomonas vaginalis* among pregnant and non pregnant women in Nnamdi Azikiwe University Teaching Hospital Nnewi, Anambra State, Nigeria.

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## ABSTRACT

Vaginal trichomoniasis is a recognized Sexually Transmitted Infection (STI) with reproductive health complications as well as causing an increase in susceptibility to HIV infection. However few data exist in our environment concerning the pathogen in pregnant and non pregnant women since the HIV epidemic. In this study, 2720 women comprising 1420 pregnant and 1300 non pregnant women were screened for *Trichomonas vaginalis*. Vaginal swabs of these women were processed using three diagnostic methods viz: - Saline wet preparation, Giemsa staining and culture method using modified chocolate agar. The prevalence of *T. vaginalis* was 9.3% in both pregnant and non pregnant women. The highest diagnostic yield of 246 (9.04%) was from the culture method while the least 182 (6.7%) was obtained with the Giemsa staining. The women were also screened for HIV infection and 480 (17.7%) were HIV sero-positive with 182 of them having *Trichomonas vaginalis* infection. At  $P \leq 0.05$ . It was found that there is a significant relationship between trichomoniasis and HIV infection. The culture technique though costly and time consuming is the most sensitive among the three methods used and in view of the relationship between STIs especially Trichomoniasis and HIV infection it becomes pertinent to use a sensitive method to diagnose *Trichomonas* infection with subsequent proper treatment.

**Keywords:** *Trichomonas vaginalis*: Pregnant and non-pregnant women.

## INTRODUCTION

The parasite protozoan *Trichomonas vaginalis* is a common pathogen that causes trichomoniasis and has been linked to preterm birth acquisition of human immunodeficiency virus, infertility and non gonococcal urethritis<sup>1-3</sup>. In spite of the knowledge, Trichomoniasis is probably the most neglected sexual infection not only in Nigeria but Worldwide<sup>4</sup>. Due to recognized anatomical and physioimmunological factors, this infection is known to be worse during pregnancy or immediately after menstruation. Studies on prevalence of *T. vaginalis* have been in the past in Ibadan<sup>5</sup>, Lagos<sup>6</sup> and Owerri<sup>7</sup>. These studies are relatively old, were done before the HIV epidemic and the patients were not screened for HIV and none has been done in Nnewi. This study was designed to provide an up to date

knowledge on the prevalence of *T.vaginalis* in Nnewi among pregnant and non pregnant women and the relationship between HIV infection and Trichomoniasis.

## MATERIALS AND METHODS

Between October 2002 and April 2003, 1420 pregnant women attending antenatal clinic at Nnamdi Azikiwe University Teaching Hospital (NAUTH) Nnewi were selected for the study as well as 1300 non pregnant females attending the Gynaecology out patient clinic in the same hospital. The ages ranged between 11 and 50 years. These patients were examined after their consent was obtained. Pre test counselling was done by trained counsellors prior to HIV test and post test counselling before HIV screening result was revealed to patient. Data on sexual history, clinical signs and symptoms were

recorded. Three samples of vaginal fluid were taken from the posterior fornix of the vaginal wall using sterile cotton swabs, after the introduction of a sterile vaginal speculum without antiseptics or lubricants. Using the first swab, the organism was detected by microscopic examination of a saline mount<sup>8,9</sup>. The second swab was inoculated onto a plate containing 25ml of Ewang's modification of chocolate agar<sup>10</sup>. The third swab was used to make a smear on a clean grease free slide fixed with methanol and then stained with Giemsa. Blood was collected, allowed to clot and the serum used for HIV1 and 2 Bispot screening.

**RESULTS**

Of the 2720 women studied, 252 were found to be infected with *T.vaginalis* giving a prevalence of 9.3%. Out of the 252 positive cases, 150 were pregnant while 102 were non pregnant. Table 1 shows the comparison of the three diagnostic methods used. Using a chi square ( $\chi^2$ ) test at  $P \leq 0.05$ . It was found that there was a significant difference between the three methods employed, with the culture method being the most sensitive and the Giemsa staining being the least. The distribution of *Trichomonas vaginalis* infection among different age groups is shown in Table2. The ages mostly affected are those between 21

and 30 years and the least affected are those between 41-50 years. The HIV screening of the 2720 women revealed that 480 were HIV seropositive while 2240 were negative. Of the 480 HIV seropositive cases, 182 were infected with *Trichomonas vaginalis* of which 150 were pregnant and 32 were non pregnant while in 2240 HIV negative women, only 70 were found with *T. vaginalis* infection. Using a chi square  $\chi^2$  to test for significance at  $P \leq 0.05$ , shows a statistical difference between *T.vaginalis* infection in pregnant and non pregnant women. Table 3. Table 4 shows *Trichomonas vaginalis* infection in relation to clinical signs and symptoms.

**DISCUSSION**

The prevalence of *T.vaginalis* infection in the study is 9.3%. This conforms with previous work by Acholonu<sup>11</sup>, Rotimi and Somorin<sup>12</sup> in Lagos which gave prevalence rates of 8.21% and 10.5% respectively but differs remarkably with the report of Anosike et al,<sup>7</sup> where students of higher institution who are known to be very sexually active were used as the study population. Hart<sup>13</sup>, in 1993 showed that pregnancy is an independent predictor for trichomoniasis.

Table 1: Comparison of the saline wet preparation, culture, and Giemsa stain technique for the detection of *Trichomonas vaginalis*.

Diagnostic methods	Number examined	Number positive	Number Negative
Culture	2720	246	2474
Wet mount	2720	218	2502
Giemsa Stain	2720	182	2538

$X^2 = P \leq 0.05$

Table 2: Distribution of *Trichomonas vaginalis* infection among different age groups.

Age group in years	Number examined	Number positive(%)
11-12	720	62 (24.6)
21-30	1,004	124 (49.2)
31-40	802	58 (23.0)
41-50	194	8 (3.2)
Total	2,720	252 (100%)

Table 3: Distribution of *Trichomonas vaginalis* infection among HIV sero-positive and HIV sero-negative individuals.

HIV serostatus	HIV positive (%)	HIV negative (%)	Total number
<i>T. vaginalis</i>	182 (37.9%)*	70 (3%)	252
Absence of <i>T. vaginalis</i>	298 (62.1%)	2170 (97%)	2468
	480(100%)	2240 (100%)	

( )\* = 31.3% are pregnant women

Table 4: Symptoms associated with *Trichomonas vaginalis* infection in the patients studied.

Symptoms	Number examined	Number with <i>T. vaginalis</i> infection	Number without <i>T. vaginalis</i> infection
Itching/Burning sensation	680	96 (14.1%)	584
Discharge	520	65 (12.5%)	455
Itching/Burning sensation and vaginal discharge	618	116 (18.7%)	502
No symptoms	1940	28 (1.4%)	1912

The majority of the infected women were within the age ranges of 21-30 years, followed by 11-20 years in the present study. These correspond with the second and third decades of life which Anosike<sup>7</sup> noted as being the most affected group as they are very sexually active at this stage. The incidence of *Trichomonas vaginalis* in the last reproductive age range was the least. This could be attributed to the decline in sexual activity and also alteration in pH due to lower or at times non secretion of reproductive hormones<sup>14</sup>. The distribution of *T.vaginalis* between HIV seropositive and sero negative individuals revealed that a significant statistical relationship existed between trichomoniasis and HIV infection. The works of Shutter<sup>14</sup>, Ugo and Acholonu<sup>15</sup>, and Cameron et al<sup>16</sup> also buttress that fact. *T.vaginalis* enhances the transmission of HIV<sup>17</sup> and symptomatic *T.vaginalis* infection significantly increases the amount of HIV shed in semen<sup>18</sup>. Moreover treatment of *T.vaginalis* infection significantly lowers the vaginal and seminal HIV viral load in dually infected subjects<sup>19,20,21</sup>. Given the high prevalence of *T.vaginalis* infection and the inter relationship with HIV/AIDS, its control will have a significant impact on the HIV epidemic in

Africa, and may reduce the incidence of adverse pregnancy outcome.

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