



PREVALENCE OF *TRICHOMONAS VAGINALIS* AMONG PREGNANT WOMEN FROM SELECTED HOSPITALS IN ILORIN METROPOLIS

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ABSTRACT

The occurrence of *Trichomonas vaginalis* in five randomly selected public and private hospitals in Ilorin metropolis using Microscopy and Culture was evaluated. The total number of 250 High vaginal swab and urine were collected from pregnant women. Wet preparation method was carried on slide for the High vaginal swab and swabs negative for *Trichomonas vaginalis* were subjected to culture method. Also Urine was centrifuged slowly and the deposit was examined under the microscope. Out of the 250 subjects examined, 50 (20 %) of the women were found to be infected with *Trichomonas vaginalis*. Of the infected subjects, the highest prevalence of 24 % was detected in age group (21-30), followed by 22 % in age group 41-50 and least of 15 % in age group 31-40 but was not statistically significant ($P > 0.05$). Also in relation to occupation, the highest prevalence (56 %) was found among the students, followed by civil servants with prevalence of 48 % and the least prevalence of 6.4 % in others and it is statistically significant ($P < 0.05$). Furthermore in relation to the residential area, Ilorin south had the highest prevalence of 39 % then Ilorin east and Ilorin west. The highest prevalence of the infection (47 %) was found in the first trimester of the pregnancy, 18 % in second trimester while the lowest 15 % in the third trimester and it was statistically significant ($P = 0.003$). The study confirms *Trichomonas vaginalis* infection in Ilorin metropolis among pregnant women.

Keywords: Prevalence, *Trichomonas vaginalis*, Pregnant women, Selected Hospitals, Ilorin, Kwara state, Nigeria.

INTRODUCTION

Trichomoniasis has emerged to be one of the most common sexually transmitted infections¹. Trichomoniasis is the most common curable STD in young, sexually active people. Estimated 7.4 million new cases occur each year in women and men²⁻⁴. Trichomoniasis is a common sexually transmitted disease (STD) that affects both women and men, although symptoms are more common in woman. Trichomonal infection has been encountered in every continent and climate and has no seasonal variability. It has a cosmopolitan distribution and has been identified in all racial groups and socioeconomic strata. Recent data has shown that the annual worldwide incidence of Trichomoniasis is more than 170 million cases⁵. In fact the World Health Organization has estimated infection to accounts for almost half of all curable sexually transmitted infections. The incidence of Trichomoniasis is as high as 56 % among patients attending STD clinics⁶. Trichomoniasis is caused by the single-celled protozoan parasite, *Trichomonas vaginalis*. *Trichomonas vaginalis* is a flagellated protozoan parasite, 10-30 μm in diameter; that infects 170-200 million individual worldwide⁷. In Brazil, it affects 10-20 % of the female population. Also reported a greater prevalence of this infection (13.1 %) compared to other Human Immunodeficiency Virus (HIV-related) and Sexually Transmitted Infections⁸. It is one of the most frequent and widespread sexual transmitted infectious/diseases worldwide. The main signs of a *Trichomonas* infection in women are abdominal pain, itching and presence of a foul-smelling discharge with abundant leukocytes. Infection with this organism is also associated with severe complications, such as infertility and enhanced predisposition to neoplastic transformation in cervical tissues. Asymptomatic infection rates are as high as 50 % in women nearly

half of all women with *T. vaginalis* are asymptomatic. Signs of infections in symptomatic women include vaginal discharge (42 %), odor (50 %), edema or erythema (22-37 %) and colpitis macularis, i.e. strawberry cervix (a clinical sign) which is characterized by punctate hemorrhagic lesions. Other complaints may include dysuria, a yellowish-green frothy discharge, pruritis, dyspareunia and lower abdominal pain. Complications include cystitis, cervicitis and urethritis. Reports have implicated *Trichomonas vaginalis* in upper reproductive tract post-surgical infections, reversible infertility, low birth weight, preterm labor, neonatal morbidity and mortality^{9,10}. The disease is primarily transmitted through sexual contact, but contaminated fomites such as towels and clothing have been implicated in the transmission¹¹. The incidence of Trichomoniasis depends on the population screened/examined. Certain factors such as poor personal hygiene, multiple sex partners, low socio-economic status and under development are associated with high incidence of infection¹². The vagina is the most common site of infection in women and the urethra (urine canal) is the most common site of infection in men. The parasite is sexually transmitted through penis-to-vagina intercourse or vulva-to-vulva (the genital area outside the vagina) contact with an infected partner. Women can acquire the disease from infected men or women, but men usually contract it only from infected women²⁻⁴. Neonatal Trichomoniasis can be acquired during passage through an infected birth canal. It is estimated that 2 to 17 % of female babies acquire Trichomoniasis through direct vulvo-vaginal contamination¹⁰. Pregnant women with Trichomoniasis may have babies who are born early or with low birth weight (low birth weight is less than 5.5 pounds)⁴. Recent literature documents that women infected during pregnancy are predisposed to premature rupture of membranes, premature labor and low-birth-weight infants¹³. Further, it may

amplify HIV transmission. *T. vaginalis* is an obligate parasite in that it lacks the ability to synthesize many macro molecules de novo, particularly purines, pyrimidine and many lipids. These nutrients are acquired from the vaginal secretions or through phagocytosis of host and bacterial cells. Culture media for *T. vaginalis* therefore need to include all the essential macro molecules, vitamins and minerals. In particular, serum is essential for the growth of trichomonads, since it provides lipids, fatty acids, amino acids and trace metals, although it can also grow through a wide range of pH, especially in the changing environment of the vagina. The presence of *T. vaginalis* in the vagina increases predispositions to HIV seroconversion¹⁴. The genital inflammation caused by Trichomoniasis can increase a woman's susceptibility to HIV infection if exposed to the virus. Having Trichomoniasis may increase the chance that an HIV-infected woman passes HIV to her sex partner(s). The organism typically elicits an aggressive local cellular immune response with heavy infiltration of leucocytes even in symptom-free patients. In addition, in about 50 % of infected women, punctuate hemorrhages can be observed. Few studies have been published on *T. vaginalis* but confirmed that the risk of *T. vaginalis* is higher in women reporting a greater lifetime number of sexual partners in those with poorer education levels and in women with alcohol dependency while report that the infection was also more common in women with concomitant cervicitis or bacterial vaginosis¹⁵. On the other hand, the use of condoms and progesterone-only contraceptive methods (Norplant) was found to be associated with a lower risk of infection in a multivariate analysis model. Prevention of Trichomoniasis has not been a priority due to lack of understanding of its public health implications and lack of resources. For long it has been considered a minor STD. The natural history of this organism, including its often symptomless nature and protracted carriage, play an important role in HIV transmission dynamics, especially where heterosexual behavior and a high prevalence of HIV obtain. *T. vaginalis* is one of the most frequent sexually transmitted infections worldwide. It is known to be the most common, curable, sexually transmitted infection among sexually active women and may be associated with the acquisition and transmission of HIV⁸. Its presence in the vagina increases predisposition to HIV sero-conversion. It has also been incriminated as a cofactor in the transmission of HIV. It has been reported that *Trichomonas vaginalis* causes discomfort and psychosocial distress in infected patients. Trichomoniasis is also reported to be a major cause of pathology in obstetrics and gynaecology^{9,10,16}. According to some researchers, *T. vaginalis* increases the risk of acquiring HIV, since it provides pools of leukocytes and macrophages that intensify the shedding of HIV in the genital area. This infection may also provoke disruption of the epithelial barrier and may cause micro-ulcerations in the genital tract increasing the portal of entry and exit of the parasite^{17,18}. Another factor that favors transmission is the capacity of the infection to degrade secretory leukocyte protease inhibitor, a product capable of blocking the virus from attacking the cells. *T. vaginalis* may also activate the immune cells increasing TNF- α cytokine production in the presence of this parasite^{19,16}. Many studies have been published on the prevalence of *T. vaginalis*. The purpose of this study is to determine the present prevalence of *Trichomonas vaginalis* in Ilorin metropolis in relation to age, occupation, trimester period and residential areas. Also to affirm associated risk factors usually assists in the appraisal of this disease.

MATERIALS AND METHODS

Study area

The study area was Ilorin metropolis, the state capital of Kwara state. It is about 150-151 Km to Abuja, Federal Capital Territory.

Study population (subjects)

A total of 250 pregnant women between the ages 21-50 years were considered for the study after receiving informed consent from them to participate in the study.

Sample and data collection

High vaginal swabs (HVS) were collected from randomly selected 250 women attending antenatal clinics in five health facilities within Ilorin metropolis. Sterile cotton wool swabs were aseptically used in collecting the HVS samples after obtaining informed consent from the patients. A wet smear (wet mount) was made of each HVS, immediately after collection, in a drop of physiological saline on a clean glass slide covered with a cover slip and examined microscopically for the quick jerky motion of the protozoa. Subjects completed a self-administered questionnaire and provided vaginal swab specimens according to procedures described by Sutcliffe²⁰. On the questionnaire, patients were asked to provide information on age group, residential area, occupation and their last menstruation to calculate the trimester. Following completion of the questionnaire, women were asked to provide vaginal swab and urine. Specimens were stored at 4°C and transported to the laboratory for processing immediately.

Laboratory procedure

High Vaginal Swabs (HVS) and urine were tested for *T. vaginalis*.

HVS Microscopy and culture

A wet smear (wet mount) was made of each High vaginal swab, immediately after collection, in a drop of physiological saline on a clean glass slide covered with a cover slip and examined microscopically for the quick jerky motion of the protozoa. HVS negative for the presence of *Trichomonas vaginalis* were subjected to culture method using Oxoid *Trichomonas* medium as described²¹.

Urine Microscopy

Aseptically, about 10 ml of well mixed urine was transfer to labeled test tubes. It was then centrifuged at 500-1000 g for 5 minutes. The supernatant fluid was poured by completely inverting the tube into a second container. The sediment was remixed by tapping the bottom of the tube. One drop of the well mixed sediment was placed on a slide and cover with cover glass. The preparation was then examined microscopically by using 10x and 40x objective with the iris closed sufficiently to give contrast²².

Questionnaire Data

Interviewers collected data on age group, occupation, residential area and their trimester.

RESULTS

There were 250 High vagina swabs examined. Of the 250 samples examined 50 (20.0 %) swabs, showed positive result for *Trichomonas vaginalis* infection. Table 1 shows the prevalence of *Trichomonas vaginalis* colonization in relation to age of the subjects. It shows that a high level of prevalence (24 %) was detected in the age group 21-30. This was followed by age group 41-50 (22 %) while age group 31-40 years had the least percentage of (15 %). Table 2 shows the prevalence of *Trichomonas vaginalis* in relation to the occupation of the subjects. Subjects studying show a high level of prevalence 28 (56 %), followed by the Civil servants that had 12 (48 %) of prevalence. And others show the least prevalence 10 (6.4 %). Table 3 shows the detection and prevalence

of *Trichomonas vaginalis* in relation to their Residential areas. Ilorin south had the highest prevalence of 25 (39%). This was followed by Ilorin west 15 (19%) while Ilorin east had the least percentage 10 (10%). Table 4 shows the prevalence of *Trichomonas vaginalis* in relation to trimester (period of three months pregnancy). It shows

that a high prevalence was observed in first trimester (47%), followed by the second trimester (18%) and the lowest was in the third trimester (15%).

Table 1: Detection and prevalence of *Trichomonas vaginalis* in relation to Age of subjects

Age Group of subjects (years)	Number Examined	No positive for <i>T. vaginalis</i> (%)	P value
21-30	50	12 (24%)	0.570
31-40	94	15 (15%)	
41-50	106	23 (22%)	
Total	250	50 (20.0)	

Table 2: Detection and Prevalence of *Trichomonas vaginalis* in relation to Occupation of subjects

Occupation of subjects	Number Examined	No Positive for <i>T. vaginalis</i> (%)	P value
Studying	68	28 (56%)	0.000
Civil Servants	25	12 (48%)	
Others	157	10 (6.4%)	
Total	250	50 (20%)	

Table 3: Detection and Prevalence of *Trichomonas vaginalis* in relation to Residential areas

Residential area of subjects	Number Examined	No positive for <i>T. vaginalis</i> (%)	P value
Ilorin West	80	15 (19%)	0.000
Ilorin South	65	25 (39%)	
Ilorin East	105	10 (10%)	
Total	250	50 (20%)	

Table 4: The detection and prevalence of *Trichomonas vaginalis* in relation to their trimester (period of three months)

Trimester	Number Examined	No positive for <i>T. vaginalis</i>	P value
First trimester	30	14 (47%)	0.003
Second trimester	90	16 (18%)	
Third trimester	130	20 (15%)	
Total	250	50 (20.0)	

DISCUSSION

In this study, using microscopy for confirming the presence of *Trichomonas vaginalis*, and the prevalence of *Trichomonas vaginalis* was 20.0%. This is in agreement with a report indicating frequency of 20.0% among pregnant women in Abeokuta, Nigeria²³, also in line with other reports indicating the prevalence of *Trichomoniasis* as 38 (25.3%) in some part of Oyo²¹. It is however higher than what is obtained in the study carried out among women in Iraq with frequency of (5.3%)²⁴. Sexually transmitted disease awareness programs that mass media targeted at the younger generation might have contributed to the lower prevalence observed in the 31-40 year old group, but does not have serious effect on age group 21-30 may be due to increased libido, sense of adolescence and high level of promiscuity at this age. Overall, half of all the women affected were in the 31-40 year-old age group. These older women might have lacked knowledge about health issues or might have lacked the confidence to correctly identify problems, and might have used traditional medicine rather than modern treatment as observed with women in Iran who are especially prone to adhere to traditional customs. The incidence of Poverty, socioeconomic status, low educational level, high risk sexual behaviors, prisoners and vaginal *Trichomoniasis* has noticeably risen especially in developing countries and in populations with high-risk behaviors such as poor sexual activity hygiene and multiple sexual partners. HIV⁺ or HBV⁺ infected people are risk factors for acquiring STDs such as vaginal *Trichomoniasis*^{25,26}. Diagnosis of *Trichomoniasis* has relied mostly on wet mount demonstration and staining of the parasite in the laboratory, various successes ranging from 20-80% of this method is documented²⁷. However a combination of cultural method with microscopic wet mount demonstration is now the

acceptable procedure for effective diagnosis of this protozoa infection^{21,28}.

CONCLUSION

Trichomonas vaginalis can lead to urogenital tract infection and is the most common non-viral sexually transmitted infection. *Trichomonas vaginalis* infection in women usually present with abdominal pain, itching and presence of a foul-smelling discharge with abundant leukocytes. Infection with this organism is also associated with severe complications, such as infertility and enhanced predisposition to neoplastic transformation in cervical tissues. Therefore this findings support the need for improved disease control activities to reduce adverse *Trichomoniasis*, associated reproductive health outcomes such as ectopic pregnancy, low infant birth weight. The use of condom is recommended for those sexually active women with multiple sex partners to avoid spreading of the infection and treatment should be given to the sex partners of infected women. Also, awareness program to sensitize the populace on the health challenges that are associated with the presence of *Trichomonas vaginalis* should be given a priority. A routine vaginal swab for pregnant women in the third trimester is also recommended, also there is need to educate people on the need for good personal hygiene and safe sex practices.

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