

Prevalence of *Trichomonas vaginalis* Among Females Visiting Some Selected Hospitals in Makurdi, Benue State Nigeria

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Abstract: A study of *Trichomonas vaginalis* infection among females visiting some selected hospitals in Makurdi metropolis, Benue State was carried out. A total of 200 females of 15 years and above, who attended BSUTH, City Hospital Makurdi, Bishop Murray Medical Centre and Immaculate Conception Hospital were involved in the study. Structured questionnaires were used to gather demographic information from the individuals. One hundred and nine (109) samples of urine and ninety one (91) samples of high vaginal swab (HVS) were collected using sterile urine bottles and sterile non-abrasive high vaginal swab sticks. All samples were examined microscopically within two hours of collection. The presence of *T. vaginalis* was detected by its characteristic jerky movement in the wet preparation. Results showed that 21 (10.5%) urine and HVS samples were positive. The highest prevalence of infection was within the age group of 21-26 years ($P > 0.05$) followed by 15-20 years with (14.3%). There was no significant difference in infection rate in relation to the nature of sample collected ($P > 0.05$). There was however, a significant difference in infection rate between rural 16 (23.5%) and urban 5 (3.8%) patients ($P < 0.05$). There is a need to focus on the predisposing factors making ladies vulnerable to infection especially in the villages.

Keywords: *Trichomonas vaginalis*, Makurdi, Microscopy

1. Introduction

Trichomonas vaginalis is an obligate parasite, which lives in close association with the vagina, urethral or prostatic tissues [1]. Human trichomoniasis is a widely prevalent sexually transmitted disease of worldwide importance. The incidence in normal population is approximately 100%. Asymptomatic infections have been observed in 50% of infected female patients. It covers the mucosa down to the urethral orifice, vestibular glands and clitoris [2]. Transmission takes place directly because the trophozoite does not have a cyst. *T. vaginalis* is generally restricted to the genitourinary tract by the host's immune system, and is the etiological agent of human trichomoniasis. Infection has been associated with an increased risk of human immunodeficiency syndrome in both sexes [3]. In women, symptoms of infection include vaginal secretion that is scanty and mixed with mucus; malodorous discharge that is frothy, yellow or green, mucopurulent, and

copious. Acute infection is characterized by severe pruritus, vaginitis, vulvitis with dysuria and dyspareunia, and hemorrhagic spots on the mucosa [4]. The prevalence is lower in men, and infection is often asymptomatic. Infection in men can be present in the prostate, seminal vesicles, and epididymis. Complications are rare, but can potentially lead to genitourinary inflammation, disease, sterility, scanty, clear to mucopurulent discharge, dysuria, non-gonococcal urethral disease, infection usually mild with no symptoms, thus making men potential carriers. Spontaneous resolution of infection is common as the oxidative nature of the male genital tract is speculated to be inhibitory to pathogenic factors of infection, which usually remains for ten days or less. Morphologically it resembles *T. tenax*, it measures 10-30 μm in length and 5-12 μm in width [2].

Several researches prove that Trichomoniasis has a worldwide distribution. The prevalence ranges from 5% to more than 50% in different populations. Factors associated with high prevalence are the same as for sexually transmitted disease;

poor personal hygiene, multiple sexual partners, and low socio-economic status. The WHO estimated that 180 million cases of infection are acquired annually world-wide [4-5].

1.1. Justification

Trichomoniasis is a serious health problem affecting millions of people each year and women are more susceptible [6]. There is a higher prevalence among people with multiple sexual partners and / or other venereal disease. An estimated 120 million cases of trichomoniasis occur worldwide each year. According [7], it is an important co-factor in HIV transmission and may increase HIV shedding (risk of contraction from an infected individual). Trichomoniasis is quite debilitating and has a peak incidence in females between ages 15-24 years. It has been suggested by [8], that at least 1 in 5 adult women experience *T. vaginalis* at some point in their life time. Globally, Trichomoniasis affects approximately 57-180 million people, with the majority living in developing countries [9]. This justifies the importance of Trichomoniasis as a health problem.

1.2. Aim

This work was carried out between March and May 2015 and the aim was to determine the prevalence of *T. vaginalis* among females visiting some selected Hospitals in Makurdi, Benue State Nigeria.

1.3. Objectives

- To provide baseline data/ information on the prevalence and distribution of Trichomoniasis

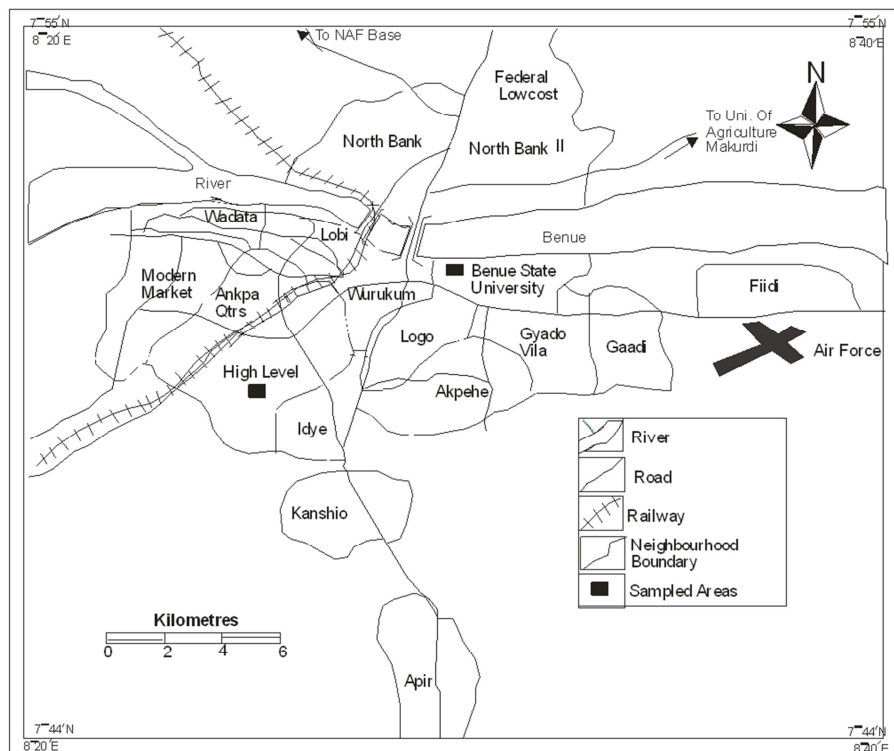
- To determine the prevalence of Trichomoniasis based on the nature of sample collected
- To make recommendations based on the results of the findings

2. Methodology

2.1. Study Area

Makurdi metropolis, the capital city of Benue State Nigeria is located within the Niger-Benue trough along the bank of the River Benue.

The town is located between latitude $7^{\circ}30':7^{\circ}43'N$ and longitude $8^{\circ}30':8^{\circ}35'E$. The mean monthly temperature is between $22^{\circ}C-38^{\circ}C$ and the mean annual rainfall range is between 150mm-180mm. The town has a typical high tropical climate with two clearly marked out seasons: rainy season which is prolonged and starts from the month of April to early October and the dry season that begins in late October and ends in March. During the prolonged rainy season, most areas become swampy and wells become filled up due to the low water table of the town. The lack of pipe-borne water throughout 95% of the town, causes residents to resort to drinking the rain water in the rainy season, sachet water and to patronize water hawkers during the dry season while those who live along the river bank drink directly from the river, the sanitary conditions of these water sources cannot be vouched for. Occupationally, the people of Makurdi are predominantly civil servants and farmers. The most speaking languages are Tiv, Idoma, Iggede and Etulo.



Source: Ministry of Lands and Survey Makurdi

Figure 1. Map of Makurdi showing the sampled areas.

2.2. Letter of Introduction

An introduction letter was gotten from the Head of Department of Biological Sciences, Benue State University introducing the researcher with the aim of the research clearly stated. This letter was taken to the Heads of Laboratory unit of the hospitals selected where approval to carry out the research was obtained. Informed consent was also obtained from all the study subjects after the study objectives were fully explained to them. Females of age 15 and above were given equal opportunities to contribute to the research from which information gotten from them was recorded in an anonymous pattern in order to ensure confidentiality. Care was also taken not to violate any laboratory ethics, fundamental and human rights of the patients.

2.3. Study Design and Sampling Procedure

The study population comprised of Females visiting City Hospital, Teaching Hospital, Bishop Murray Hospital and Immaculate Conception Hospital all in Makurdi. 200 samples were gotten from volunteers for the work. Samples were gotten as patients presented themselves to be examined. Samples were collected and questionnaires were administered to them.

2.4. Sample Collection

A structured questionnaire was used as an aid in the sample collection. The basis for questionnaire administration was to get demographic data so as to relate the rate of infection with the data collected from the patients. Instructions on samples collection were given according to those specified by [10].

2.5. Sampling

A total of 200 samples of either HVS (High Vaginal Swab) or Urine samples were collected from women who came in the Laboratory, using sterile swab sticks and sterile urine bottles respectively.

2.6. Microscopy Examination of Specimen

Two methods were used in diagnosing *T. vaginalis* microscopically:-

Direct microscopy: High vaginal swab and urine samples were examined as wet preparations.

For HVS, two drops of normal saline were put into the swab container and mixed with the exudates collected on the swab stick. This was used to make a smear on a clean glass slide, covered with a coverslip and viewed first with x10 and then the x40 objectives for confirmation.

For urine sample, the urine was put into a centrifuge tube and spun after which the supernatant was decanted and the sediments was used to make a smear on a clean glass slide, covered with a coverslip and viewed first with x10 and then the x40 objectives for confirmation. The aim was to detect

motile cells.

Stained Smear Examination: This method was applied where specimen could not be examined immediately or if wet mount was negative. A smear was made, air dried and stained with Giemsa dye.

2.7. Observation

Trichomonas trophozoites were seen with a jerky or jumpy movement.

2.8. Analysis of Result

Demographic and other data generated were entered into SPSS software (Statistical Packages for Social Sciences) version 21 and then analyzed using chi-square. Descriptive statistics were mainly used to describe the characteristics of the population under the study such as age, Nature of sample collected, Hospitals, Domicile. Significant differences between categorical variables were determined at 95% confidence level and $P < 0.05$ was taken as significant value.

3. Results

3.1. Prevalence with Respect to Age

The prevalence of *T. vaginalis* among females attending some selected Hospitals in this study with respect to age are shown in table 1. The age group of 21-26 had the highest prevalence of infection however no significant difference was observed across the age groups. ($p > 0.05$).

3.2. Prevalence with Respect to Nature of Sample, Patients Locality and Percentage of Infection

The Prevalence of *T. vaginalis* based on the Nature of sample Specimen collected is shown in table 2. Table 3 shows the Prevalence of *T. vaginalis* among females visiting the different selected hospitals in Makurdi metropolis. Statistical analysis shows that the prevalence of *T. vaginalis* infection is not dependent on the hospital/health centre visited. Table 4 differentiates the number of the patients based on Domicile. Significant value was found between the Urban and Rural patients ($P < 0.05$). Figure 2 shows the percentage of infection in the sampled population while Figure 3 illustrates the structure of *Trichomonad* trophozoite.

Table 1. Prevalence of *T. vaginalis* among females visiting some selected hospitals in Makurdi in respect to age.

Age Group	Number Examined	Positive <i>T. vaginalis</i> (%)
15-20	35	5 (14.3)
21-26	55	8 (14.5)
27-32	46	2 (4.3)
33-38	36	4 (11.1)
39-44	26	2 (7.7)
45-50	2	0 (0.0)
TOTAL	200	21 (10.5)
$\chi^2 = 3.811$	df=5	P=0.577 ($P > 0.05$)

Table 2. Prevalence of *T. vaginalis* among females visiting some selected hospitals in Makurdi based on Nature of Specimen.

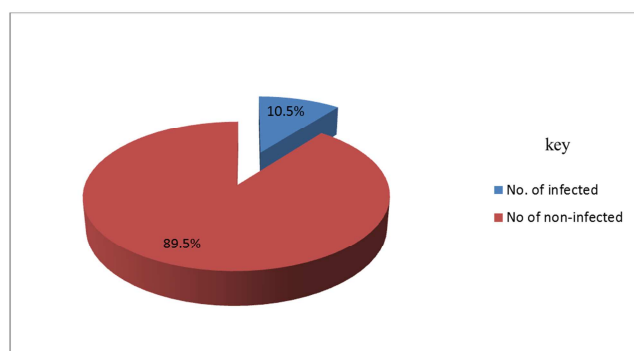
Nature of Specimen	Number Examined	Positive <i>T. vaginalis</i> (%)
Urine	109	11 (10.1)
HVS	91	10 (11.0)
TOTAL	200	21 (10.5)
$\chi^2 = 0.042$	df=1	P=0.837 (P>0.05)

Table 3. Prevalence of *T. vaginalis* among females visiting some selected hospitals in Makurdi metropolis.

Hospitals	Number Examined	Positive <i>T. vaginalis</i> (%)
BSUTH	50	7 (14.0)
City Hospital	60	5 (8.3)
Bishop Murray MC.	50	5 (10.0)
Immaculate Hospital	40	4 (10.0)
TOTAL	200	21 (10.5)
$\chi^2 = 0.975$	df=3	P=0.807 (P>0.05)

Table 4. Prevalence of *T. vaginalis* among females visiting some selected hospitals in Makurdi based on Domicile.

Domicile	Number Examined	Positive <i>T. vaginalis</i> (%)
Urban	132	5 (3.8)
Rural	68	16 (23.5)
TOTAL	200	21 (10.5)
$\chi^2 = 18.612$	df=1	P=0.000 (P<0.05)

**Figure 2.** Percentage of infection in the sampled population.**Figure 3.** *Trichomonas trophozoites*.

4. Discussion

This study shows a high prevalence of Trichomoniasis with 14.5% in patients within the age group of 21-26 years old and 14.3% in patients within the ages 15-20 years as

compared to 0.0% of infection in the age group of 45-50 years. This could be as a result of high sexual activity among younger adults, which can lead to involvement in sex with multiple partners without protection. It could also be caused by low enlightenment about the risks involved causing them to be more susceptible to the infection. The study is line with the one conducted by [11] who reported that the risk of trichomoniasis increased in women who had more lifetime sex partners and [12] which shows respondents of age 21-30 years having the highest prevalence of infection (23.53%) as compared to ages 41- 50 years with (12.07%). The study however disagrees with the findings of [12] where the age group of 30-34 years had the highest infection rate of 10.9%.

Trichomoniasis was more prevalent in Rural dwellers 16 (23.5%) than Urban dwellers 5 (3.8%). This could be due to poor personal hygiene practices among the rural dwellers which facilitates the parasites mode of transmission [4]. There was significant difference (P<0.05) in the prevalence of Trichomoniasis between Urban and Rural patients, this study agrees with the findings made by [8] in which he emphasized that proper sex education and genital hygiene are factors that contribute to reduction in the occurrence of *Trichomoniasis*.

The presence of *T. vaginalis* has public health implications for HIV as it confirms the result of having unprotected sex, and the use of condom is advised. According to [13], *T. vaginalis* increase the rate of HIV transmission by approximately two fold. The need to provide proper counseling and sex education cannot be overemphasized. Treatment to control and prevent this infection is advocated since HIV and *T. vaginalis* spread as sexually transmitted disease.

5. Conclusion

T. vaginalis is the most common curable STI (Sexually transmitted infection) worldwide, with a high burden of disease in resource-limited countries and high-risk groups in industrialized countries. Although *T. vaginalis* was previously thought to be an insignificant, largely asymptomatic infection, evidence that it facilitates the transmission of HIV is growing and given its high prevalence in these settings, it can no longer be ignored. Trichomoniasis is a serious health problem affecting millions of women world-wide; its infection is highly prevalent in sexually active populations. A majority of women and men with Trichomoniasis are asymptomatic. Further research is required to develop and disseminate cheap, sensitive point-of-care diagnostic tests, allowing a greater understanding of the epidemiology of *T. vaginalis* and targeted screening of asymptomatic individual.

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