

## PREVALENCE OF *TRICHOMONAS VAGINALIS* AMONG THE SEXUAL PARTNERS OF WOMEN WITH TRICHOMONIASIS IN IBADAN, NIGERIA.

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This study was conducted to determine the prevalence of *Trichomonas vaginalis* among the sexual partners of women with Trichomoniasis. While 103 female patients were found to have *T. vaginalis* using both direct wet mount microscopy and culture, only 44(42.7%) male contacts reported for screening. *Trichomonas vaginalis* was isolated from 20(45.5%) of the 44 male contact investigated, whilst there was no laboratory evidence of the agent in 13(29.6%) of the study group. Amongst the 60 control subjects, *T. vaginalis* was recovered from 7(11.7%) of them. The difference in the occurrence of *T. vaginalis* between the patients and the control group was highly statistically significant ( $p < 0.001$ ). This implies that in most cases, infestation with *T. vaginalis* in the male is silent and might represent a carrier state. Eight (40%) of the 20 men with *Trichomonas vaginalis* and 43.2% of the 44 men investigated were between 20 and 29 years and this parallels that of other sexually transmitted diseases. While only 6(30%) of the men with *T. vaginalis* were diagnosed by direct wet mount preparation, all the 20 (100%) positive cases were diagnosed by culture. This however, indicated the general superiority of culture over fresh smears but it is desirable to use both methods in the diagnosis of Trichomoniasis since they complement each other.

Key Words: *Trichomonas vaginalis*, Prevalence, Sexual Partners, Trichomoniasis, Ibadan.

### INTRODUCTION

*Trichomonas vaginalis* has been incriminated as one of the common sexually transmitted genital pathogens and is found to be associated with approximately 20% of all cases of non-gonococcal urethritis (NGU) (1). Trichomoniasis is widely distributed all over the world and remains a common infection among female patients attending sexually transmitted disease clinics. However, in spite of the fact that the presence of *Trichomonas vaginalis* in the male urinary tract was discovered as early as 1883 by Kuntler, there is scanty information on its prevalence in the male patients

asymptomatic cases and self-limited nature of the infection (2). While majority of female patients harbouring this organism present with vaginal discharge, which is usually frothy, greenish-yellow and offensive, the infection in the male may give rise to no symptom or present as low-grade non-gonococcal urethritis (2). Unlike pre-pubertal gonococcal vulvovaginitis cases occasionally encountered in Ibadan, Trichomoniasis among this age group is very rare (3). Dunlop and Wisdom (4) found no *T. vaginalis* even in post pubertal virgins from the study done in 1965, which confirms sexual contact as the main mode of transmission. The fact that vaginitis due to *T. vaginalis* continues to cause considerable

and prolonged distress to many women and a high incidence of relapse even after a considerable period of freedom from symptoms because of re-infection by coitus, the study of the infected male becomes a matter of considerable importance (5). Trichomoniasis has been frequently found among the sexual partners of patients with proven infection and in fact, the parasite has been demonstrated in 30-40% of male sexual partners of infected women (6-11). A prevalence of 70% was observed among men who had sexual contact with infected women within the previous 48hr. and only 33% of men were infected if their last contact was 2 weeks previously (12). Several studies have suggested an increased cure rate in women following treatment of their regular sexual partner (13-16). Apart from the retrospective studies done in Ibadan by Osoba (17) and Alausa (18) in 1972 and 1974 respectively, no detailed study has been conducted in our environment to determine the prevalence of *Trichomonas vaginalis* among the male sexual partners of infected women even though these sexual contacts are being treated epidemiologically. The aim of the present study was to determine the prevalence of *Trichomonas vaginalis* among the sexual partners of women with Trichomoniasis

## **MATERIAL AND METHODS**

### **Study population**

The study population comprised all sexual contacts of women with confirmed diagnosis of *Trichomonas vaginalis* infection who were invited for screening. These represented a highly selected group of men who had undoubtedly been exposed frequently to *Trichomonas vaginalis*. Each patient was questioned as regards his marital status, previous genito-urinary symptoms, data of last coitus and other sexual consorts (whether casual or regular). The previous antimicrobial drugs used before attending the clinic were noted. A clinical examination of the lower genito-urinary tract for signs of infection such as urethral discharge and the nature of the discharge was carried out.

### **Control group**

Sixty male patients randomly selected among the male patients that attended Special Treatment Clinic, University Collage Hospital, Ibadan, but without symptoms during the period of study were entered into the study. This group represented a cross-section of presumable sexually active male, some of which reported because of fear of venereal disease but had no infection.

### **Laboratory procedures**

The urethral specimens were examined for the presence of *Trichomonas vaginalis* by agitating

the cotton swab in 1ml of saline in a tube and a drop of resulting suspension transferred to a microscope slide. The preparation was covered with a cover slip and then examined at x100 and x400. A Gram-stained smear was also examined for the presence of intracellular Gram-negative diplococci, other bacteria and yeast cells. The urethral specimens were then plated on modified Thayer-Martin medium and incubated using standard method (19). Culture for *T. vaginalis* was performed using Nutrient Broth Glucose Serum medium (20). Examination for presence of *T. vaginalis* was made at 48 hours and 5 days of incubation by making a wet mount of sediment from the bottom of the Bijou bottles containing the medium and motile *T. vaginalis* were searched for.

#### **Data analysis**

Statistical analysis was performed using the student t and the chi squared tests.

#### **RESULTS**

During the period of study, 103 female patients were found to have *Trichomonas vaginalis* using both direct wet mount microscopy and culture whilst only 44 (42.7%) male contacts of the women reported for screening. While *Trichomonas vaginalis* was isolated from 20 (45.45%) of the 44 male

patients investigated, there was no laboratory evidence of the agent found in 13 (29.55%) of the study group (Table1). There was evidence of urethritis in all the *T. vaginalis* positive cases as shown by the presence of increase in the number of polymorpho-nuclear leucocytes in voided urine and urethral swabs examined (>4-5/HPF). Seven (15.9%) of the 44 male patients had non-specific urethritis (NSU) with no evidence of incriminating agent. Amongst the 60 control subjects, *T.vaginalis* was recovered from 7(11.7%) of them. The difference in the occurrence of *T.vaginalis* between the patients and the control group was highly statistically significant ( $p<0.001$ ).

Table 2 shows the age distribution of the 44 male patients investigated, 43.2% were within the age of 20 to 29 years while 11.3% were over 50 years of age. Of the 20 men with *Trichomonas vaginalis*, 8(40%) were between the age of 20 and 29 years. While 39 (37.9%) of the female partners investigated were single, 26 (25.2%) were married, 11(10.7%) separated, 18 (17.5%) divorced and 9(8.7%) widowed (Table 3). Twenty six (59.1%) of the men investigated were single, 26.7% of whom had contact with casual consorts and 73.3% had contact with regular consorts. Of the 18 (40.9%) that were married; only 16.7% had contact with their wives. Table 4

compares the positive diagnostic rates by the different method used. While 6 (30%) of the 20 *T. vaginalis* isolated were diagnosed

by direct wet mount microscopy, all the 20 (100%) were isolated on culture. All the men with *Trichomonas vaginalis* were treated and requested to attend for a repeat examination after 2 weeks but seven failed to report.

**Table 1: INCIDENCE OF *Trichomonas vaginalis* IN MALE PARTNERS OF INFECTED WOMEN. N=44.**

Diagnosis	Number	Percentage
<i>Trichomonas vaginalis</i>	20	45.5
<i>Candida albicans</i>	3	6.8
T.V & Candida	1	2.3
NSU	7	15.9

**Table 2: AGE DISTRIBUTION OF MEN INVESTIGATED n=44.**

AGE (years)	Number	Percentage	No. of T.V. Positive Pts.	Percentage
10-19	4	9.1	1	5
20-29	19	43.2	8	40
30-39	8	18.2	3	15
40-49	8	18.2	6	30
> 50	5	11.3	2	10
<b>TOTAL</b>	<b>44</b>	<b>100</b>	<b>20</b>	<b>100</b>

**Table 3: MARITAL STATUS OF FEMALE PARTNERS OF MEN INVESTIGATED**

Marital Status	Number	Percentage
Single	39	37.9
Married	26	25.2
Separated	11	10.7
Divorced	18	17.5
Widowed	9	8.7
<b>TOTAL</b>	<b>103</b>	<b>100</b>

**Table 4: COMPARISON OF POSITIVE DIAGNOSTIC RATES BY DIFFERENT METHODS.**

	Wet mounts Prep.	Culture
No. of Positive n=20	6	20
Percentage Positive	30	100

**P<0.001**

## DISCUSSION

*Trichomonas vaginalis* has been incriminated as one of the common sexually transmitted pathogens and although appears to be highly prevalent with a widespread geographical distribution, it has not been the focus of intensive study nor of active control programs (3, 21). Most patients with *Trichomonas vaginalis* infection are asymptomatic or mildly symptomatic and hence they are likely to continue to remain sexually active in spite of infection (21,22). While it has been reasonably confirmed in our centre that *T. vaginalis* is a cause of non-gonococcal urethritis (NGU) (3), many of these patients still come for treatment because they are the sexual partners of women with symptomatic infection.

In this study, a significantly high proportion of male that are repeatedly exposed to *T.vaginalis* during sexual contact themselves harbour the agent. While 20 (45.5 %) sexual partners of women with Trichomoniasis had *T. vaginalis* isolated from their urethral swabs, 7(11.7%) of the 60 control subjects were positive. This implies that in most cases, infestation with *T.vaginalis* in the male is silent and might represent a carrier state.

Age distribution of male patients with *Trichomonas*

*vaginalis* parallels that of other sexually transmitted diseases (3, 23-25). A large percentage (43.2 %) of the men investigated as well as 40 % of those with *T. vaginalis* were within the age range of 20-29 years. This is the period of greatest sexual activity and those in this group tend to be promiscuous and are therefore prone to sexually transmitted diseases. Trichomoniasis has been found to be prevalent among patients with higher levels of sexual activity and larger number of different sexual partners (25). Twenty-six (59.1%) of the men investigated were single, 26.7 % of whom had contact with casual consorts and 73.3 percent with regular consorts. This confirms the repeated exposure these men have to *T.vaginalis* during sexual contact. This is in contrast with the findings of the previous study where a large percentage of the men investigated had contact with casual consorts (23). Extramarital exposure to risk of infection by casual contacts among married men also plays an important part in the transmission of infection (17) which may be due to the fact that married men abstain from sexual intercourse with their wives during pregnancy and few years after delivery. In this study, 15(83.3%) of the 18 married men had contact with casual consorts whilst only 16.7% had contact with their wives. The data

on the prevalence of Trichomoniasis vary around the world, depending on the reliability of the diagnostic tests used on them and their response to medical examination. During the period of study, 103 female patients showed cultural evidence of Trichomoniasis and were given contact tracing paper for their partners but only 44 (42.7%) of the male contacts of the women came for screening. This confirmed the attitude of the general population to investigations of sexually transmitted diseases. In the less educated people, it is difficult to separate venereal diseases from genital infection of other kinds (3). To this set of people, any case of urethral discharge is gonorrhoea and genital ulcer is syphilis. In the case of Trichomoniasis that often lacks symptoms and signs, it is almost impossible to convince these people to come for screening. Some of them declined to be examined or investigated and in spite of the strict confidentiality in the clinic, many of those men invited queried the possibility of STI and repeated reassurance and explanation could not remove the lingering doubts. There are conflicting reports on the role of *T.vaginalis* in causing complications in infected male patients. Compared to other sexually transmitted diseases,

Trichomoniasis is relatively devoid of late complications. However, a few cases of acute, non-gonococcal epididymitis have been attributed to Trichomonal infection (1, 26-28). In some cases, *T. vaginalis* was observed in epididymal aspirates and it has been isolated from about 10 % of some series of infertile men (1,7), but such association does not imply causality. Some workers have observed phagocytosis of spermatozoa by *T. vaginalis* (7), and others have noted that in the presence of large numbers of the agent in vitro, sperm mobility is decreased (1,11). Ogunbanjo *et al* (29), by retrospective study on infective factors of male infertility among Nigerians, found *T. vaginalis* to be one of the causative agents of conjugal infertility.

Many workers have found cultural method to be superior to other methods such as fresh wet mount examinations and staining (3,23,30). This has been confirmed by this study. While only six (30%) of men with *T. vaginalis* were diagnosed by direct wet mount preparation, all the twenty (100%) positive cases were diagnosed by culture. There is a high significant difference between the two laboratory methods. This however, indicates the general superiority of culture over fresh smears but it is desirable to use both methods in the diagnosis of Trichomoniasis since they complement each other.

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## REFERENCES

1. Krieger JN. Urological aspects of Trichomoniasis. *Invest. Urol.* 1981 ; **18** : 411.
2. Michael F, Rein MM. Protozoan infections- *Trichomonas vaginalis*: sexually transmitted disease. *J. Am. Ven. Dis. Ass.* : 525.
3. Bakare RA, Ashiru JO, Adeyemi-Doro FAB, et al. Non-gonococcal urethritis (NGU) due to *Trichomonas vaginalis* in Ibadan. *West Afr. J. Med.* 1999 ; **18(1)** : 64-68.
4. Dunlop EMG, Wisdow AR. Diagnosis and management of Trichomoniasis in men and women. *Brit. Vener. Dis.* 1995 ; **14** : 85.
5. Lancely F. *Trichomonas vaginalis* infection in the male. *Brit. Vener. Dis.* 1953 ; **29** : 213.
6. Honigberg B. Trichomonads of importance in human medicine. In: Kreier JP (ed). *Parasitic protozoa.* 1978 ; **2** : 275.
7. Brown MT. Trichomoniasis. *Practitioner.* 1972 ; **209** : 639.
8. Whittington MJ. Epidemiology of infection with *Trichomonas vaginalis* in the light of improved diagnostic methods. *Br.J. Vener. Dis.* 1957 ; **3** : 80.
9. Gallai Z, Sylvestre L. The present status of urogenital Trichomoniasis: A general review of Literature. *Appl. Therapeutics.* 1966 ; **8** : 773 .
10. Block E. Occurrence of *Trichomonas* in sexual partners of women with Trichomoiiasis. *Acta Obstet. Gynaecol. Scand.* 1959 ; **38** : 398.
11. Perl G, et al. Male urogenital Trichomoniasis. *J. Mt. Sinai (NewYork).* 1965 ; **32** : 495.

12. Weston TET, Nicol CS. Natural history of Trichomonal infection in males. *Br. J. Vener. Dis.* 1963 ; **39** : 251.
13. Burch TA, et al. Epidemiological studies on human Trichomoniasis. *Am. J. Trop. Med. Hyg.* 1959 ; **8** : 312.
14. Peterson WF, et al. Metronidazole in pregnancy. *Am. J. Obstet. Gynaecol.* 1966 ; **94** : 343.
15. Underhill RA, Peck JE. Causes of therapeutic failure after treatment of Trichomonal vaginitis with Metronidazole: Comparison of single dose treatment with a standard regimen. *Brit. J. Clin. Pract.* 1974 ; **28** : 134.
16. Hager WD, et al. Metronidazole for vaginal Trichomoniasis: Seven day vs. single dose regimens. *JAMA.* 1980 ; **244** : 1219.
17. Osoba AO. Epidemiology of urethritis in Ibadan. *Brit. J. Vener. Dis.* 1972 ; **48** : 116-120.
18. Alausa O, Osoba AO. The role of STD in male infertility in Tropical Africa. *Nig. Med. J.* 1978 ; **3** : 225-29.
19. Cowan ST, Steel KJ. Manual for the identification of medical bacteria. 2<sup>nd</sup> edition. Cowan. Cambridge Univ. Press. 1974.
20. Adebayo JA. Isolation of *Trichomonas vaginalis*: a simple diagnostic medium for use in developing countries. *Med. Lab. Sc.* 1986 ; **43** : 91-92.
21. Sorvoillo F, Smith L, Kerndt P, Ash L. *Trichomonas vaginalis*, HIV and African-Americans: Synopsis. *Emerg. Infect. Dis.* 2001 ; **7(6)** : 927.
22. Wilkinson D, Abdool Karim SS, Harrison A, et al. Unrecognized sexually transmitted infections in rural South African women: a hidden epidemic. *Bull World Health Organization.* 1999 ; **77** : 22-8.



23. Bakare RA, Oni AA, Umar US, *et al.* Prevalence of *Trichomonas vaginalis* among Commercial Sex Workers (CSWs) in Ibadan, Nigeria. *Afr. J. Clin. Exp. Microbiol.* 2002 ; **3(2)** : 72-77.
24. Bakare RA, Oni AA, Umar US, *et al.* Penicillinase producing *Neisseria gonorrhoeae*-the review of the present situation in Ibadan, Nigeria. *Nig. Postgrad. Med. J.* 2002 ; **9(2)** : 59- 62.
25. Tanyuksel M, Gun H, Doganci L. Prevalence of *Trichomonas vaginalis* in prostitutes in Turkey. *Centr. Eur. J. Publ. Health.* 1996 ; **4(2)** : 96-7
26. Fisher I, Morton RS. Epididymitis due to *Trichomonas vaginalis*. *Br. J. Vener. Dis.* 1969 ; **45** : 252.
27. Catteral RD. Dignosis and treatment of Trichomonal urethritis in men. *Brit. Med. J.* 1960 ; **2** : 113.
28. Amar AD. Probable *Trichomonas vaginalis* epididymitis. *JAMA.* 1967 ; **200** : 417.
29. Ogunbanjo BO, Osoba AO, Oshei J. Infective factor of male infertility among Nigerians. *Afr. J. Med. Sci.* 1989 ; **18** : 35-38.
30. Omigbodun OA, Bakare RA, Thomas JO. Detection of *Trichomonas vaginalis* by the papanicolaou smear. *Trop. J. Obstetr. Gynaecol.* 1993 ; **10(1)** : 37-39.