

Prevalence of Trichomonas Infection among Women Attending Antenatal Clinics in Zaria, Nigeria

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Abstract

Background: Trichomoniasis has emerged to be one of the most common sexually transmitted infections.

Methods: High vaginal swabs (HVS) were collected from randomly selected 300 women attending antenatal clinics in three public health facilities within Zaria.

Results: The prevalence of trichomoniasis amongst three hundred randomly selected women attending three antenatal clinics in Zaria was determined by the direct wet mount examination and culture techniques on high vaginal specimens collected with sterile swabs. Of the total patients screened for trichomoniasis, there was an 18.66% prevalence rate 35.71% of which were diagnosed by direct microscopic examination of HVS wet mount preparations. The infection rate was highest among the age group of 16-25 year –which had a prevalence rate of 53.57% followed by the 26-35 year age group with 32.14%.

Conclusions: The high recovery rate obtained in this study demonstrates the importance of employing both direct microscopic examinations of wet mount preparation and culture techniques in the diagnosis of trichomoniasis. These findings also confirm the advantage of using culture techniques over the wet mount direct microscopic examination of HVS in the diagnosis of this disease.

Key words: Trichomoniasis, broth culture, wet mount, STI, pregnant women, diagnosis

Résumé

Introduction: La trichomonase est devenue comme des infections sexuellement transmissible le plus ordinaire.

Méthodes: Tampons vaginal élevé (TVE) ont été collectionnés chez 300 femmes choisies au hasard qui consultent des cliniques anténatales dans trois centres hospitaliers publiques à Zaria.

Résultats: La fréquence de la trichomonase chez trois cents femmes choisies au hasard qui consultent trois cliniques anténatales à Zaria était décidée par l'examen mouillé mount directe et techniques de la culture sur des spécimens élevés vaginal collectionnés avec tampons stérile. Parmi toutes les patientes sélectionnées pour la trichomonase, il y avait 18,66% taux de la fréquence de 35,71% parmi lesquels ont été diagnostiqués par examen microscopiques directe de TVE préparations mouillées monte. Le taux de l'infection était le plus élevé chez la tranche d'âge de 16 – 25 ans qui avait un taux de la fréquence de 53,57% suivie par la tranche d'âge de 26 – 35 avec 32,14%.

Conclusion: Le taux élevé de la quérison obtenue dans cette étude indique l'importance de l'utilisation de la préparation d'examen microscopique mount mouillé directe et technique de la culture dans le diagnostique de la trichomonase les deux. Ces résultats également confirment l'avantage microscopique du mount mouillé directe de TVE dans le diagnostique de cette maladie.

Mot-clés: Trichomonase, culture broth, monte mouillé, STI, femme enciente, diagnostique

Introduction

Trichomoniasis has emerged to be one of the most common sexually transmitted infections.¹ It is caused by a pear-shaped protozoan, called *Trichomonas*

vaginalis.^{1, 2} The disease is characterized in female patients by frothy-greenish-foul smelling vaginal discharge accompanied with vulvo-vaginal irritation, dysuria and lower abdominal pains.³ These symptoms are usually aggravated during menses and pregnancy.

Other complications include cystitis, cervicitis and urethritis.⁴

Reports have implicated *Trichomonas vaginalis* in upper reproductive tract post surgical infections, reversible infertility, low birth weight, preterm labour, neonatal morbidity and mortality.^{4, 5} 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 contamination.⁶ It has also been incriminated as a cofactor in the transmission of HIV.⁶

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.⁴

The disease is primarily transmitted through sexual contact, but contaminated fomites such as towels and clothing have been implicated in the transmission.² 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 underdevelopment are associated with high incidence of infection.⁷

Trichomonas vaginalis has been described as a common cosmopolitan parasite of both males and females. Approximately 180 million people are infected world wide yearly, while in the United States of America, 5 million women and 1 million men are infected annually.^{8, 9} Incidence rates of 5% have been reported in asymptomatic patients attending family planning clinics, 50-75% in Commercial Sex Workers, and 0.9 to 39.6% in sexually transmitted infection clinics.⁵

Trichomonas vaginalis is detectable in vaginal, prostatic or urethral secretions, semen and urine of infected individuals.¹⁰ The most commonly employed diagnostic methods are: direct microscopic examinations of wet mount preparations¹¹ (sensitivity of microscopic observations varies from 38% - 82%), and culture techniques. Other methods include antigen detection methods, plastic envelope method, in-pouch system, cell culture, staining techniques, serological and DNA techniques.¹²

Direct examination of wet mount preparation of clinical specimen is the most rapid, most commonly used and least expensive technique for identifying *Trichomonas vaginalis*.² This method has however been reported insensitive for the diagnosis of the disease, particularly in male patients.^{5, 13} The broth culture technique is more sensitive and valuable-

especially when the organisms are few- in fact, culture of the organism using vaginal specimens is the current "gold standard".^{14 - 16} Although Polymerase Chain Reaction (PCR) techniques are currently being designed,¹¹ combination of both wet mount examination and culture has been recommended as being more effective in establishing diagnosis than either one alone.

This study was undertaken to determine the prevalence of trichomoniasis among the screened population, and to compare the sensitivity of wet mount examination with culture technique in the diagnosis of trichomoniasis.

Materials and Methods

High vaginal swabs (HVS) were collected from randomly selected 300 women attending antenatal clinics in three public health facilities within Zaria. 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. Both microscopically trichomonads negative and positive HVS samples were cultured in Oxoid *Trichomonas* broth medium enriched with sterile bovine serum (purchased from Flow Laboratories, U.K.). The cultures were incubated at 36°C and wet mount preparations from it were examined at 24 hourly intervals for seven days before they were discarded as negative.¹⁷

Results

Out of 300 HVS samples collected from randomly selected pregnant women and screened, 56 (18.66%) were positive for trichomoniasis as detected by culture techniques. The direct microscopic examination of wet mount preparation detected only 20 (6.66%) positive cases (Table 1). Thirty-six (36) of the negative samples and the 20 positive trichomonad samples under the wet mount examination were culture positive. All positive cultures were detected maximally by the 5th day of incubation. It was discovered that *T. vaginalis* infection was most prevalent among the 16-25 years age group comprising 30 (53.57%) of the 56 positive cases (Table 2).

Table 1: Comparison of sensitivity of wet mount against culture techniques in the diagnosis of trichomoniasis from high vaginal swab

Diagnosis	No. positive for <i>T. vaginalis</i> (%)	No. negative for <i>T. vaginalis</i> (%)	Total (%)
Wet mount	20 (6.66)	280 (93.33)	300 (100)
Culture	56 (18.66)	244 (81.33)	300 (100)

Table 2: Prevalence of trichomoniasis on the basis of age and method of diagnosis

Diagnosis	Prevalence (%)			Total
	Age (years)			
	16 - 25	26 - 35	≥36	
Wet mount	12 (21.4)	6 (10.7)	2 (3.6)	20
Culture	30 (53.6)	18 (32.1)	8 (14.3)	56

Discussion

Trichomoniasis is estimated by the World Health Organization to account for almost half of all curable sexually transmitted infections world-wide,¹ and is said to be the most prevalent non-viral STI in the world.¹⁸ Whereas bacterial sexually transmitted infections such as syphilis, gonorrhoea and chlamydia are declining (at least in the U.S.) the rate of infection caused by *T. vaginalis* remains constant or is on the increase.¹¹ Unfortunately, however, increased screening efforts have not materialized, so that despite its limited sensitivity,¹³ direct microscopic examination of the vaginal specimen remains the most widely utilized diagnostic test for this infection.¹² According to some workers,^{15,19} culture methods are currently the gold standard and should be considered for widespread clinical use.

As shown in Table 1, 18.66% of the specimens screened yielded *T. vaginalis* by culture techniques; compared with 6.66% by the wet mount preparation. This gives 35.69% sensitivity of wet mount preparation with respect to culture, similar to another report,¹⁹ which noted that wet mount preparation is only 35-80% sensitive compared with culture.

Trichomoniasis was more prevalent in the 16-25 year age group (53.57%), followed by the 26-35 year age group (32.14%). Although there is a general consensus that the prevalence of *T. vaginalis* vary markedly according to settings,⁸ these findings agree with the assertion that the prevalence may be as high as 50% in women in the developing world and in minority groups in industrialized populations,⁸ and with similar works in other parts of Africa. For example, some of the reported prevalence rates in Africa are: 49.2% in South Africa;²⁰ 34% (microscopy only) in Nairobi, Kenya,²¹ 37% of urine culture among females in a higher institution in Nigeria²² and 24.7% (microscopy only) in Tanzania.²³

Although Aboyeji and Nwabuisi²⁴ observed a prevalence rate of 4.7% at Ilorin, Nigeria, this may be due to the fact that their studies were restricted to a University teaching hospital. They however concluded that the risk factors associated with significant infections were young age and level of education. This agrees with the findings here that the 16-25 year olds were mostly infected. The true dynamics of *T. vaginalis* infection are unknown, nevertheless, the most striking feature of the epidemiology is the consistently high prevalence

found in sexually active women and disadvantaged populations.⁸

The present study is especially significant because, according to Donders,²⁵ treatment possibilities are limited in pregnant women because of potential risks for the developing foetus, and because effects can differ in pregnant compared with non-pregnant women and also because pregnant women are more reluctant to take prescribed medication in full dose, if at all. He however concluded that the devastating effects of some of these genital infections far outweigh any potential adverse effects of treatment.

The drug of choice for trichomoniasis is metronidazole,⁹ although metronidazole resistant isolates have consistently been encountered clinically.²⁶ There has been reluctance to utilize metronidazole for trichomoniasis in pregnant women (particularly in the United States of America) because of weakly mutagenic effects in bacteria and carcinogenic effects detected in rodents, however no teratogenic effects have been detected during the long use of metronidazole in human.⁹

The most important available options are to lower the risks of infection through reductions in the community prevalence of the disease.⁸ This may be better achieved through routine STI screening in pregnancy especially among the young and non-illiterates, and as suggested by Aboyeji and Nwabuisi,²⁴ routine screening for STIs should be incorporated into antenatal care. At the same time, there is a need to educate people on the need for good personal hygiene and safe sex practices; in addition to the need of governments (particularly in developing economies) to improve the socio-economic status of their citizenry.

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