



Tehran University of  
Medical Sciences  
Publication  
<http://tums.ac.ir>

Iranian J Parasitol

Open access Journal at  
<http://ijpa.tums.ac.ir>



Iranian Society of  
Parasitology  
<http://isp.tums.ac.ir>

## Original Article

### Prevalence of *Trichomonas vaginalis* Using Parasitological Methods in Tehran

\*M Rezaeian<sup>1</sup>, M Vatanshenassan<sup>1</sup>, S Rezaie<sup>1</sup>, M Mohebal<sup>1</sup>, N Niromand<sup>3</sup>, M Niyati<sup>2</sup>, S Farnia<sup>1</sup>, Z Babaei<sup>1</sup>

<sup>1</sup>Dept. of Medical Parasitology & Mycology, School of Public Health, Tehran University of Medical Sciences, Tehran- Iran

<sup>2</sup>Dept. of Medical Parasitology & Mycology, School of Medicine, Shaheed Beheshti University of Medical Sciences, Tehran, Iran

<sup>3</sup>Mirzakuchak Khan Hospital, Tehran University of Medical Sciences, Tehran, Iran

(Received 5 Jun 2009; accepted 2 Nov 2009)

#### Abstract

**Background:** *Trichomonas vaginalis* is a parasitic protozoan with a predilection for human urogenital tract and causative agent for vaginitis, cervicitis and urethritis in females. *T. vaginalis* is known as a cofactor in transmission of human immunodeficiency virus and may lead to adverse outcomes in pregnant women. The goal of this study was to determine the prevalence of *T. vaginalis* infection in females attending Mirzakuchak Khan Hospital, Tehran, Iran.

**Methods:** During May 2008 to March 2009, 500 vaginal discharges samples were obtained from women attending sexual transmitted disease (STD) clinic of Mirzakuchak Khan Hospital in Tehran, Iran. The samples were examined by Dorsse culture medium and wet-mount methods. The prevalence of *T. vaginalis* was determined using culture based method and wet-mount examinations.

**Results:** Sixteen positive (3.2%) and 484 negative (96.8%) samples for *T. vaginalis* were detected by culture based methods. The wet mount examination revealed 13 positive (2.6%) and 487 negative (97.4%) samples. In the above population, prevalence of trichomoniasis was estimated as 3.2% based on culturing method.

**Conclusion:** Due to adverse outcomes of vaginal trichomoniasis and its correlation with HIV transmission, there is a great need for public education regarding implementation of personal hygienic measures and prevention of inappropriate sexual contacts.

**Keywords:** *Trichomonas vaginalis*, vaginal discharge, prevalence, culture, wet-mount, Iran

\* Corresponding author: +98-021-88951392. [rezaiian@sina.tums.ac.ir](mailto:rezaiian@sina.tums.ac.ir)

## Introduction

*Trichomonas vaginalis*, a parasitic protozoan, is the causative agent responsible for vaginal trichomoniasis in women. This infection is the most common non-viral sexually transmitted disease and has a predilection for human urogenital tract (1). Trichomoniasis is often asymptomatic in men, however in more than half of the infected women manifests as vaginitis, cervicitis, urethritis and irritation with frothy malodorous discharge (1-3). *T. vaginalis* is known as a cofactor in transmission of human immunodeficiency virus (HIV) (4). Negative outcomes of this infection are especially significant during pregnancy. Indeed, infected pregnant women may develop complications such as preterm birth and low birth weight infants (5,6).

Previous research has shown that *T. vaginalis* causes 180 million new infections per year worldwide (7). In Iran, the prevalence of trichomoniasis has been reported between 2 to 8% and likely up to 30% in high-risk populations (8). Variation in reported prevalence of trichomoniasis can be due to application of different diagnostic method and studied subjects (9). Clinical findings are nonspecific and cannot differentiate between trichomoniasis and other urogenital infections (9). In fact, parasitological diagnostic methods such as culture are more reliable to diagnosis of this protozoan (2). Currently diagnosis of this infection is mainly based on presence of motile organisms in vaginal discharge samples using direct microscopic examination and cultivation based methods.

This study was aimed to determine the prevalence of trichomoniasis in females referred to a sexual transmitted disease (STD) clinic in Tehran, Iran, using culture and wet-mount methods.

## Materials and Methods

This research was conducted as a cross sectional study. From May 2008 to March 2009, 500 vaginal discharge samples were obtained from women attended to sexual transmitted disease clinic at Mirzakuchak Khan Hospital in Tehran, Iran. Informed consent and questionnaire from collecting demographic data, sexual history (number of sexual partners) and clinical symptoms were obtained from all participants. Two vaginal specimens were collected with sterile swabs. The first swab was inoculated in liquid phase of Dorsse culture medium (10) at the bedside, which was considered as our diagnostic gold standard. The second swab was applied to glass slide with a drop of Ringer solution for microscopic wet mount examination with magnification of  $\times 400$  and 50 fields was examined. The culture mediums were transferred to the Parasitological laboratory, School of Public Health, Tehran University of Medical Sciences and incubated at 37°C for 72 hours. The cultures were examined with light microscopy every day until they turned positive. Positive cultures were defined as detection of motile *T. vaginalis*.

## Results

*T. vaginalis* was identified in 16 out of 500 (3.2%) vaginal specimens using culturing method. In comparison, direct microscopic examinations revealed only 13 positive (2.6%) vaginal samples out of 500 women participants (Table1). The age range of infected females with *T. vaginalis* was mainly from 32 to 48 (87.5%). Overall, based on culture results the prevalence of vaginal trichomoniasis in this clinic was 3.2%. The majority of patients were married and among them, 372 (74.4%) were married in a monogamous relationship and 128 (25.6%) had multiple sexual partners. In this manner, no relationship was seen

between trichomoniasis and having husband or multi sexual partners by statistical analysis using SPSS version 13. From 500 patients, 347 (69.4%) showed disease symptoms. Common reported

symptoms included vaginal discharge, genital irritation, itching, genital ulcer disease, abdominal and groin pain (Table 2).

**Table1:** Detection of *T. vaginalis* by parasitological examination (Culture and Wet- mount)

Method	Specimen	Positive results		Negative results		Total
		N	%	N	%	
Culture	Vaginal discharge	16	3.2	484	96.8	500
Wet mount	Vaginal discharge	13	2.6	487	97.4	500

**Table2:** Common reported symptoms in positive patients

Symptoms Positive patients	Vaginal discharge N (%)	genital irritation or itching N (%)	genital ulcer (Histological signs) N (%)	abdominal and groin pain N (%)
16	16(100)	12(75)	8(50)	7(44)

## Discussion

*T. vaginalis* can lead to urogenital tract infection and is the most common non-viral sexually transmitted infection (9, 11). The incidence of 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. Poverty, socioeconomic status, low educational level, high risk sexual behaviors, prisoners and HIV<sup>+</sup> or HBV<sup>+</sup> infected people are risk factors for acquiring STDs such as vaginal trichomoniasis (1, 8, 9, 11). In the present study, *T. vaginalis* was

found in 3.2% of female patients attended to STD clinic using cultivation method as the gold standard. Previous studies in Iran regarding trichomoniasis prevalence were 4% and 4.56% in Tehran and Tabriz, respectively (12, 13). These results are comparable with our findings. However, the prevalence of trichomoniasis in Hamadan Province was reported as 18.1% (14). This variation of reported trichomoniasis prevalence is explained by different population characteristics attended to STD clinics and examination methods, in Iran (9). The prevalence of trichomoniasis in

United States, Africa, and India was reported between 10-25% (15-18) that may be related to some different factors such as above-mentioned reasons.

Other finding of the present study showed that even though most of infected people with *T. vaginalis* were symptomatic, but reported symptoms were not specific for trichomoniasis, emphasizing that clinical findings are not reliable for diagnostic purposes. According to previous studies, 50% of infected female with *T. vaginalis* are asymptomatic. Thus, identification of silent carriers is very important for accelerating treatment and for reducing the spread of the disease in control strategies (9). To date, several methods have been used for screening and diagnosis of trichomoniasis including parasitology diagnostic method and PCR-based assays (3). However, PCR based method are not applicable in all laboratories and therefore cultivation can be promising in accurate diagnosis of this parasite (9). Indeed, despite limitations in culture method (different culture mediums), it remains as one of the most sensitive test for detection of *T. vaginalis* (1).

In conclusion, due to adverse outcomes of vaginal trichomoniasis and its correlation with HIV transmission, there is a great need for public education regarding implementation of personal hygienic measures and prevention of inappropriate sexual contacts. More research is needed regarding this common sexually transmitted infection in different populations in Iran.

### Acknowledgments

This study was supported by Grant 7007-27-02-87 from the School of Public Health, Tehran University of Medical Sciences, Tehran- Iran. We would like to thank Mrs Fatemeh Tarighi at the Parasitological laboratory of Tehran university for her parasitological technical assistance, and Mirzakupchak Khan STD clinic staffs for their kind cooperation. The authors declare that they have no conflicts of interest.

### References

1. Petrin D, Delgaty K, Bhatt R, Garber G. Clinical and Microbiological Aspects of *Trichomonas vaginalis*. Clin Microbiol Rev. 1998; 11 (2):300-317.
2. Spence MR, Hollander DH, Smith J, McCaig L, Sewell D, Brockman M. The clinical and laboratory diagnosis of *Trichomonas vaginalis* infection. Sex Transm Dis. 1980; 7(4):168-171.
3. Cox FEG, Wakelin D, Gillespie SH, Despommier DD. Topley and Wilsons, Microbiology and Microbial Infections, Parasitology. 10th Edition. Edward Arnold. London, UK. 2005.
4. Sorvillo FL, Smith L, Kerndt P, Ash L. *Trichomonas vaginalis*, HIV, and African-Americans. Emerg Infect Dis. 2001; 7(6):927-932.
5. Cotch MF, Pastorek II JG, Nugent RP, Hillier SL, Gibbs RS, Martin DH, Eschenbach DA, Edelman R, Carey JC, Regan JA, Krohn MA, Klebanoff MA, Rao AV, Rhoads GG. *Trichomonas vaginalis* associated with low birth weight and preterm delivery. The vaginal infections and prematurity study group. Sex Transm Dis. 1997; 24(6):353-360.
6. Cotch MF, Pastorek JG, Nugent RP, Yerg DE, Martin DH, Eschenbach DA. Demographic and behavioral predictors of *Trichomonas vaginalis* infection among pregnant women. Obstet Gynecol. 1991; 78(6): 1087-1092.
7. Weinstock H, Berman S, Cates W, JR. Sexually transmitted disease among American youth: incidence and prevalence estimates, 2000. Perspect Sex Report Health. 2004; 36(1):6-10.
8. Edrisian GH, Rezaeian M, Ghorbani M, Keshavarz H, Mohebbi M. Medical Protozoology. 1st ed. Tehran University of Medical Science. 2007.
9. Khan NA. Emerging protozoan pathogens. 1st ed. Taylor & Francis group. 2008.

10. Bashirybod H. Human Parasitic Infection. 1st ed. Tehran University of Medical Science. Tehran, Iran.1988.
11. World Health Organization. Global prevalence and incidence of selected curable sexually transmitted infections. World Health Organization, Geneva, Switzerland. 2001.
12. Goya MM, Nabai S. Prevalence of some sexually transmitted infections in a family planning service. IJMS journal. 2007; 54(14):143-150.
13. Jamali R, Zareikar R, Kazemi AH, Yousef S, Ghazanchaei A, Estakhri R, Asgharzadeh M. Diagnosis of *Trichomonas Vaginalis* Infection Using PCR Method Compared To Culture and Wet Mount Microscopy. Int Med J. 2006; 5(1).
14. Shobeiri F, Nazari M. A prospective study of genital infections in Hamadan, Iran. Southeast Asian J Trop Med Public Health.2006; 37(3):174-177.
15. Bachman L, Lewis I, Allen R, Schwebke JR, Leviton LC, Siegal HA, Hook EW. Risk and prevalence of treatable sexually transmitted disease at a Birmingham substance abuse treatment facility. Am J Public Health. 2000; 90(10): 1615-1618.
16. Klouman E, Masenga EJ, Klepp KI, Sam NE, Nkya W, Nkya C. HIV and reproductive tract infections in a total village population in rural Kilimanjaro, Tanzania: women at increased risk. J Acquir Immune Defic Syndr Hum Retrovirol. 1997; 14(2): 163-168.
17. Morency P, Dubois MJ, Gresenguet G. Aetiology of urethral discharge in Bangui, Central Africa Republic. Sex Transm Infect. 2001; 77(2): 125-129.
18. Sharma P, Malla N, Gupta I, Ganguly NK, Mahajan RC. Prevalence of trichomoniasis in symptomatic and asymptomatic subjects using different contraceptive devices. Indian J Med Microbiol. 1988; 6: 315-322.