

## Epidemiological study of the prevalence of *Trichomonas vaginalis* and the effect of contraceptive use on infected women in Baquba city

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World Journal of Advanced Research and Reviews, 2023, 19(02), 762–766

Publication history: Received on 12 June 2023; revised on 13 August 2023; accepted on 16 August 2023

Article DOI: <https://doi.org/10.30574/wjarr.2023.19.2.1462>

### Abstract

The study was conducted on 118 samples of female who visited the Batoul hospital and private hospitals in north of Baghdad between February 2021 and April 2022. All samples were subjected to direct microscopic examination and method transplanted by appropriate media for the purpose of diagnosis and to determine the prevalence of *Trichomonas vaginalis* parasite with identify some of the risk factors of this parasite infection among women. Also, recorded complete information about each woman, including age, housing, contraceptive use, and whether a woman was pregnant or not.

The results of the study showed that the total incidence of the *T. vaginalis* parasite was 40.6 %. The highest infection rate was in the age group (35-26) by 16.9%, while the lowest rate was recorded in the age group <55 by 1.6 %, while for women in the city, the incidence rate was 28.8% While the rate of infection of rural women 11.8 %. The highest incidence of pregnancy among non-pregnant women was 33.8 % compared to pregnant women at 6.7 %. The study also showed that the incidence increased significantly among female who did not utilize contraception compared to female who used birth control pills (10.1%, 23.7 %) respectively.

**Keywords:** Trichomoniasis; Sexually Transmitted Diseases; Contraceptive Use; *Trichomonas Vaginalis*.

### 1. Introduction

*Trichomonas vaginalis* is parasitism flagellates protozoa that cause inflammation of the vagina in women and are classified under sexually transmitted disease. The parasite passes through one stage of trophozoite and causes Trichomoniasis (Krotoski, 1999; Sood 2008). World health organization (WHO) statistics indicate a high incidence of the *T. vaginalis* parasite, which reaches millions annually (Schwebke, 2004). An estimated 174 million cases of the parasite are infected worldwide each year (Johnston, 2008). The incubation period of this disease ranges from four days to three weeks and the symptoms vary between women and men, in men the infection is most cases without any symptoms and is often unclear and less serious. In women, symptoms of abdominal pain, burning, itching, dysuria, and smelly yellow vaginal discharge (Al-Suehli, 2008; Fule, 2012 ). The parasite infects the urogenital tract in humans (Conrad, 2011), where it invades the vagina, urinary system, cervix in women, bladder, seminal vesicle, and prostate in men (Nagoba, 2007). Microscopic examination indicates a high pH in the vagina that can distinguish *T. vaginalis* infection from other bacterial vaginal infections (Hyun, 2010). The presence of the parasite in the vagina depends on the absence of lactobacillus bacteria and low pH of less than 4.5 (Karaman, 2008; Al-Bayati, 2004). The parasite can be transmitted to newborns in cases of up to 17-2% (Perazzi, 2010), where babies with breathing difficulties and have low birth weights (David, 2006; House, 2011 ). Studies carried out by many researchers related to this parasite showed that the parasite has a global prevalence, as in the study conducted by shahbani on 182 Jordanian women suffering from the disease of the reproductive system at the University of Jordan hospital in Amman, the incidence of *T. vaginalis* parasite was 48% and also recorded in Palestine high infection rates (AL-Ani, 1998), as the study by the scientist Friedrich (1985)

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showed that *T. vaginalis* disease is prevalent in the United States of America and 90 % of patients suffer from infection with *T. vaginalis* parasitic. In Iraq, carried out (Ali, 1989) a study on *T. vaginalis* infection among women who complained of vaginal discharge in Ramadi, the infection rate was 24.5% among patients with symptoms and 13.6% in women without symptoms. (Mahdi, 2001) used a centrifuge method to estimate the incidence of patients in the department of surgery of the city of medicine to find out the prevalence of vaginal Trichomoniasis and the results indicate the incidence of vaginal trichomoniasis in females by 15-6% and 10.3% in males. Concerning the risk factors for trichomoniasis among women, a study was carried out in Basra (Borchardt, 1992). The study looked at 352 women suffering from vaginal discharge at a 13% rate. The results indicated a ratio of 6.7% for women who had a miscarriage and 15.7% for women who didn't have an abortion.

The current study was carried out to isolate the *T. vaginalis* from urinary specimens and vaginal smears for women, study the effect of contraceptives on women infected with the parasite, as well as the effect of age, housing, pregnancy or not and use of contraceptives as epidemiological factors for this disease.

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## 2. Material and methods

### 2.1. Collection of samples

A total of 118 samples were collected from women who visited Al-Batoul teaching hospital and private women's clinics with vaginal discharge, ranging in age from (15-55) years for the period from 10, February to 29, April. The samples were collected in sterile plastic containers with tightly closed lids and recorded the name and serial number of the sample. Vaginal fluid samples were collected using swab. A sample of the vaginal fluid was taken from the posterior fold of the vagina and with the help of a physician using the periscope. The pH, which is an indicator of infection, was measured by placing the pH tape in contact with the vaginal fluid sample and compared with the standard colors on the package, the vaginal fluid sample was then placed in its own tube and contained 5ml sterile saline solution (Blacke, 1999). A special questionnaire was designed to collect information on each review in terms of age, housing, contraceptive use and whether the woman was pregnant or not.

### 2.2. Urine examination

After collecting samples taken from the same women with vaginal discharge, the urine samples were placed in sterile. 10ml test tubes and centrifuged at a speed of 1000 rpm for 5 minutes. A little of the sample was poured and the urinary precipitate was examined by placing a drop of that precipitate on a clean glass slide. The cover of the slide was placed above it and examined under a microscope with a magnification of 400x to investigate the presence of the parasite (Pattullo, 2009).

### 2.3. Wet preparation method

The method was used by (Kirkwood, 1988) where it has a specificity for the examination of more than 95% and a sensitivity of more than 55%, and it begins with the step of adding mixing the swab with a drop of saline solution on a clean glass slide, then a slide cover is placed to examine the sample under 40X magnification to investigate the presence of parasites.

### 2.4. Statistical analysis

The percentage was calculated using the SPSS14 program (version for windows program) to see if there are significant differences statistically significant or not (Brooks, 1998).

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## 3. Results and discussion

The highest prevalence of the *T. vaginalis* was recorded in Table (1) in the age group (35-26) years, at 16.9 %. The reason for the increase in parasite infection is due to sexual activity, malnutrition, and reproduction. Also, the age group (45-36) years recorded infection of 5.9 %, while the age group <55 recorded the lowest rate of infection at 1.6%.

This may be due to the lack of sexual effectiveness in older ages in women due to reaching menopause or due to the acquisition of immunity and resistance against subsequent injuries after exposure to prior injuries (Al-Zubaidi, 2001).

**Table 1** Percentage between infection with *T. vaginalis* and age

Age	Total number of tests	Infected	Percentage %
25-15	40	19	16.1
35-26	47	20	16.9
45-36	20	7	5.9
> 55	11	2	1.6
Total	118	48	40.6

**Table 2** Percentage of infection with *T. vaginalis* and the housing area

Housing	Total number of tests	Infected	Percentage %
Rural	42	14	11.8
City	76	34	28.8
Total	118	48	40.6

Table (2) shows that the incidence of *T. vaginalis* in rural women was 11.8 % due to poor economic, health and educational conditions in the countryside, whereas the reach of *T. vaginalis* found in female in city was 28.8 % due to population increase and lack of care personal compared to the countryside (Al-Ziyadi,2004).

**Table 3** Percentage of infection with parasitic *T. vaginalis* and Pregnancy status or not

Being pregnant or not	Total number of tests	Infected	Percentage %
Pregnant	46	8	6.7
Non-pregnant	72	40	33.8
Total	118	48	40.6

The results showed in Table (3) that the highest incidence was recorded among non- pregnant women 33.8 % while the rate of infection among pregnant women 6.7 %. The reason for the high rate of infection in non-pregnant women due to abnormal vaginal conditions as well as the level of health of the person and women pregnant women may not be effective for the occurrence of the disease and the incidence of infection in these women may be due to the change in the vaginal environment of acidity conditions that lead to a change in the growth of living and vice versa for the pregnant (Miteb,2000).

**Table 4** Percentage of infection of *T. vaginalis* and using contraceptives

Contraceptive	Total number of tests	Infected	Percentage %
Do not use	71	28	23.7
IUD	22	8	6.7
Pills	25	12	10.1
Total	118	48	40.6

Table (4) shows an increase in the incidence of *T. vaginalis* among women who do not use contraceptives by 23.7 %. The reason for this is that women who use contraceptives are more likely to review women's clinics and are in constant treatment before the development of infection, while women who do not use contraceptives, are less likely to have such clinics, the incidence is higher, as the table indicates that the incidence of contraceptive use in women using the pill was higher and by 10.1 % of women using the intrauterine device (IUD) as a contraceptive method 6.7 % . The reason for

the increase in the incidence of *T. vaginalis* parasite in women who use the pill to the hormonal effect of its contents, which leads to increased glycogen stored in the vaginal membrane, that ferments to lactic acid, leading to a change in the pH of the vagina, thus it is a suitable good environment for the growth of *T. vaginalis* (Miteb,2000).

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#### 4. Conclusion

In conclusion, the prevalence of *Trichomonas vaginalis* was 40% high among pregnant women, especially among those between the ages of 26 and 36, living in urban areas, having pregnancy, and not using contraceptives.

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#### Compliance with ethical standards

##### *Statement of ethical approval*

The researcher obtained oral consent from each participant before questioning them and did not record any personal information. The present research work does not contain any studies performed on animals/humans subjects by any of the authors.

##### *Statement of informed consent*

The author declares that Informed consent was obtained from all individual participants included in the study.

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#### References

- [1] Krotoski, M. J. (1999). Medical parasitology WB. Saunl ders co.8th ed. Philadelphia p 67.
- [2] Sood, S. & Kapil, A. (2008). An update on *Trichomonas vaginalis* . Indian J. Sex Transm. Dis. ; 29 : 7 – 14 .
- [3] Schwebke, J. R.& Burgess, D.(2004) Trichomoniasis .cline . Microbiol .Rev., 17 : 794-803 . 4 Johnston, V.J. & Mabey, D.C. (2008). Global epidemiology and control of *Trichomonas vaginalis*. Curr. Opin. Infect. Dis.; 21: 56 – 64 .
- [4] Al-Suehli, A. I. and Murad, A. S. (2008). Parasitology for University Colleges and Higher Institutes, Elka - Valletta / Malta. 2nd.
- [5] Fule, S.R. ; Fule, R.P. & Tankhiwale, N.S. (2012). Clinical and laboratory evidence of *Trichomonas vaginalis* infection among women of reproductive age in rural area. Indian J. Med. Microbiol. ; 30 : 314 – 316 .
- [6] Conrad, M., Zubacova, Z., Dunn, L. A., Upcroft, J., Sullivan, S. A., Tachezy, J., Carlton, J.M. (2011). Micosatell ite polymorphism in the sexually transmitted humanpathogen *Trichomonas vaginalis* indicatrs a genetically diverse parasite. Pathogen *Trichomonas vaginalis* indicates a genetically diverse parasite. Mol Biochem Parasitol 175: 30-38.
- [7] Nagoba, B. S .and Pichare, A. (2007). Preparatory Manual for Undergraduates Medical Parasitology. Elsevier India 35.
- [8] Hyun, S. ; Young, S. L. ; sun, J. M. & Jae, S. R. (2010). Delayed human neutrophil apoptosis by *Trichomonas vaginalis* Lysate Korean, J. parasitol., 48(1) : 1 – 7 .
- [9] Karaman, U. ; Karadag, N. ; Atambay, M. ; Arserimkaya, N.B.A. & Daldal, N. U. (2008). A Comparison of cytological and parasitological methods in the diagnosis of *Trichomonas vaginalis*. Turk. Parazitol. Derg., 32 (4) : 309 – 312 .
- [10] Al-Bayati, I. N. N. (2004), bacterial interference with the freshness of yeast cases Vulvitis and vaginitis, PhD thesis, College of Science, Al-Mustansiriya University / Iraq.
- [11] Perazzi, B. E. ; Menghi, C. I. ; Coppolillo, E. F. ; Gatta, C. ; Eliseth, M.C. ; de Torres, R.A. ; Vay, C. A. & Famiglietti, A.M.R. (2010). Prevalence and comparison of diagnostic methods for *Trichomonas vaginalis* infection in pregnant women in argentina. Korean J. Parasitol., 48 : 61 – 65 .
- [12] David, T. J. and William, A. P. (2006). Markell and Voge,s Medical Parasitology. Elsevier USA. 56- 59.
- [13] House, Y., Farraj, M. A., Ramlawi, A. and Essawi, T. (2011). Detection of *Trichomonas vaginalis* swab clinical saples from Palestinian woman by culture ISRN, Microbiol. 10: 5402- 9723.
- [14] AL-Ani, S. F. (1998). Isolation & identification of *Trichomonas vaginalis* from women complaining of vaginal discharge in AL-Ramadi .M. Se Thesis in micro .coll. of Med. AL- An bar University.

- [15] Ali, N.M. ; Sajida, H.D. ; Faiza, A.A. (1989). The incidence of *Trichomonas vaginalis* in Baghdad among random sample of population with special reference to mates infection. Technique Researches Attached. No. 2, Second year. 1989 Baghdad.
- [16] Mahdi, N.K. ; Gany, Z.H. and Sharie, F.M. (2001). Risk factors for vaginal trichomoniasis among women in Basra, Iraq. Eastern Mediterranean Health Journal, 7(6): 918-924.
- [17] Borchardt, k.A., Hernandez, V, Miller, S, Loaiciga, K, Cruz, L, Naranjo, S, and Maida N (1992). A clinical evaluation of Trichomoniasis in San jose, Costa Rica using the Inpouch TV test Genitourin. Med .68:328-330.
- [18] Blacke , D. R. ; Duggan, A. ; Joffe , A. (1999). Use of spun urine to enhance detection of *Trichomonas vaginalis* in adolescent women . Arch. pediator Adolesce . Med. 153 : 1222 – 1225 .
- [19] Pattullo, L. ; Griffeth, S. ; Ding, L. ; Mortensen, J. ; Reed, J. ; Kahn, J. & Huppert, J. (2009). Stepwise diagnosis of *Trichomonas vaginalis* infection in adolescent women. J. Clinic. Microbiol., Jan., 47: 59 - 63 .
- [20] Kirkwood, BR. (1988). Essentials of Medical Statistic Blackwell Science.
- [21] Brooks, G. F. ; Butel, J. S. ; Morse, S.A. (1998). Parasitology. In : Jawetz, Melinck, and Adelberg's Medical microbiology, 20 ed., Libraire du Liban, Appelton & Lange . Pp : 617620.
- [22] Al-Zubaidi, K. G. (2001). Epidemiology of some sexually transmitted diseases causing abnormal vaginal discharge in Najaf government. B. Sc. Thesis in microbiology, college of medicine, Kufa university
- [23] Al-Ziyadi, S. W. G. (2004). Isolation and diagnosis of *Trichomonas vaginalis* from patients with vaginal trichomoniasis in the city of Najaf. Master Thesis, College of Education for Girls, University of Kufa: 76 p.
- [24] Miteb, M. M. (2000). Isolation & identification of common pathogens among women complaining of vaginal discharge AL- Nagaf. Sc. Thesis in micro ., college of educt., Kufa University.