



Microbes and Infectious Diseases

Journal homepage: <https://mid.journals.ekb.eg/>

Original article

Prevalence of *Trichomonas vaginalis* infection among Sudanese patients with different genders in Khartoum state, Sudan

Qutoof Hashim Taha¹, Fatima Alzain Mohamed², Fatima Mokhtar², Hind Abdalrahim², Sara Ahmed Alawad², Eslam Mohamed Wedatallah², Abubaker Ibrahim Ahmed³, Alkhair Abd Almahmoud Idris^{* 4}

1- Department of Parasitology and Medical Entomology, Faculty of Medical Laboratory Sciences, National University, Sudan.

2- Department of Parasitology and Medical Entomology, Faculty of Medical Laboratory Sciences, National Ribat University, Sudan.

3- Department of Parasitology and Medical Entomology, Faculty of Medical Laboratory Sciences, Ibn Sina University, Sudan.

4- Ahfad University for Women, Sudan.

ARTICLE INFO

Article history:

Received 22 April 2022

Received in revised form 28 May 2022

Accepted 3 June 2022

Keywords:

T. vaginalis

Urine samples

Sudan

Protozoal infection

ABSTRACT

Background: *Trichomonas vaginalis* infection is one of the major health problems in the world, *Trichomonas vaginalis* infection is a common sexually transmitted protozoal infection, with an estimated 180 million prevalent cases worldwide. **Objective:** This study aims to estimate the prevalence of *Trichomonas vaginalis* infection among Sudanese patients according to sex and age in Bashaeir Hospital – Khartoum state. **Methods:** This study was a retrospective descriptive study of pre-collected urine samples, included male and female patients attending the outpatient, requested for urine general examination, samples were selected by systemic random sampling. One hundred-twenty five (125) samples have been taken; wet preparation has been done for all samples in Bashaeir Hospital lab. **Result:** 125 urine samples was examined. The number of females was 95 and males was 30. All samples were examined for *T. vaginalis*. Only 15 were positive. We could not collect data for all subjects; because it was not available. There was an available data about sex and age for 23 cases. **Conclusion:** Female was more affected by *Trichomonas vaginalis* than in males. The most affected age was ranging from (31-40) years.

Introduction

Trichomoniasis is an infection of the vagina or the male urethra and prostate gland caused by microscopic, single-celled protozoan *Trichomonas vaginalis* (*T. vaginalis*). *Trichomonas vaginalis* has a worldwide distribution. In men, the organisms live in the urinary tract, most commonly the urethra or prostate, whereas in women, it is found in the reproductive tract, usually in the vagina [1]. Commonly spread through sexual contact with vaginal or urethral discharge of infected persons [2]

and transmission of organisms via artificial insemination of infected cryobanked semen is also possible [3]. Non-sexual transmission is rare but has been observed in cases involving contaminated douche nozzles, moist wash-clothes, specula or toilet seats [4]. Transmission to newborn infant from infected mother is possible and is observed in 2-17% of cases, and can result in urinary tract. According to the World Health Organization in 2005 estimate that 153 million adults infected with *T. vaginalis*, the

DOI: 10.21608/MID.2022.135336.1305

* Corresponding author: Alkhair Abd Almahmoud Idris

E-mail address: alkhair20@hotmail.com.

© 2020 The author (s). Published by Zagazig University. This is an open access article under the CC BY 4.0 license <https://creativecommons.org/licenses/by/4.0/>.

total number of cases in Africa 39.2 million , the female patient was 23.40 and the male 6.80 [5].

A previous study conducted in 2000 among 338 women with age ranging with age ranging from 15to 69 years in a suburban Sudanese community were randomly selected and studied. Urine sample, high vaginal Swab and blood samples were investigated .The sensitivity and specificity of some laboratory tests were evaluated, trichomonas was found 7.7% [6]. In December 2008 at Omdurman Maternity Hospital, Khartoum Sudan.Vaginal and cervical swabs were obtained from each and processed for isolation and identification of pathogenic microorganism using standard methods of wet preparation, direct Gram smear, Nugent Scoring system, direct immunofluorescence and culture techniques of the 200 pregnant women enrolled ,among the vaginal infections detected trichomoniasis (0.5%) of infections [7,8].

There is different health facilities included different groups of study populations which varied regarding parasitic infections, this study run to compare different samples number with the estimated number of the beneficiaries that attend the facility.

This study aims to estimate the prevalence of *T. vaginalis* infection among Sudanese patients according to sex and age in Bashaeir Hospital – Khartoum state, Sudan.

Patients, Materials and Methods

This study was a retrospective descriptive study of pre-collected urine samples, included male and female patients attending the outpatient,

requested for urine general examination, samples were selected by systemic random sampling. 125 samples have been taken; wet preparation has been done for all samples in Bashaeir Hospital lab. Positive samples for *T. vaginalis* have been transported to Microbiology/Parasitology lab at Ribat University using transport media for confirmation by wet preparation.

The methodology used to examine the parasite was the known wet urine preparation. We confirmed a wet preparation from collected area with another wet preparation. Samples transferred for short distances for a very short periods of time to ensure that the relatively fragile diagnostic stage. The so-called (Positive samples) confirmed it with other laboratory procedure to ensure its accuracy.

Data analyzed using SPSS program (Cross tabulation method).

Ethical consideration

The written consent obtained of the participant in this study and for the hospital authority.

Results

During the period of our study a total number of 125 urine samples was examined. The number of females was 95 and males was 30. All samples were examined for *T. vaginalis*. Only 15 were positive. There was an available data about sex and age for 23 cases .The number of females was 17, only 15 of them were positive, (10 in the age group 31-40 , 5 in the age group 41-50), and out of the 30 males samples no positive cases reported.

Table 1. Prevalence of *Trichomonas vaginalis* among Sudanese patients according to age.

| Age group | Frequency | % |
|-----------|-----------|-------|
| 10-20 | 15 | 12% |
| 21-30 | 17 | 13.6% |
| 31-40 | 48 | 38.4% |
| 41-50 | 27 | 21.6% |
| 51-60 | 18 | 14.4% |
| Total | 125 | 100% |

Table 2. Distribution of *Trichomonas vaginalis* among Sudanese patients according to sex.

| Sex | Total | |
|-----------|-------|------------|
| Frequency | N | p |
| Male | 30 | 0 |
| Female | 95 | 15 (15.7%) |
| Total | 125 | 100% |

p-value was < 0.05 It is considered as statistically significant.

Table 3. Prevalence of patients with *Trichomonas vaginalis* according to social status.

| Social status | Frequency | % |
|---------------|-----------|------|
| Married | 95 | 100% |
| Single | - | - |
| Total | 95 | 100% |

p-value was < 0.05 It is considered as statistically significant.

Discussion

Trichomoniasis is the most common nonviral STD, and it is associated with many perinatal complications, male and female genitourinary tract infections, and an increased incidence of human immunodeficiency virus (HIV) transmission. Diagnosis is difficult, since the symptoms of trichomoniasis mimic those of other STDs and detection methods lack precision [2].

Infection has been associated with an increased risk of human immunodeficiency syndrome in both sexes. In women: Symptoms of infection include vaginal secretion that is scanty and mixed with mucus; malodorous discharge that is frothy, yellow or green, and copious [3].

The study proved that the infection rate was more prevalent among females (2.5%) than in males (0%) and this agree with the study of **EL-Fadil Omer** conducted in Khartoum in 1985 [8], which showed that trichomoniasis was 0% among males while it was 52.2 % in females.

A previous study performed on urine sample revealed that trichomonas was found 7.7 % [6]. Other study examined urine of 200 pregnant women among them vaginal infections have been detected and trichomoniasis (0.5%) of infections [7].

Omer et al. reported that the prevalence of vaginal trichomoniasis was 20.1% in all among 613 Sudanese women presenting with vaginal discharge. Trichomonal infection was predominant in the age groups 16-19 years (27.1%) and 46 years and above (27%), thus confirming reports that trichomonal

infection may occur during the period of greatest sexual activity, as well as at older ages. The highest prevalence was among divorced women (35.9%), followed by widowed women (29.4%) and may be related to promiscuity and to variety of sexual contacts. 16.3% of the pregnant women investigated were found harboring the parasite. Association of *T. vaginalis* with gonorrhea and candidiasis was significant, though this did not modify the symptoms and signs of trichomoniasis [9].

Abd Allha et al. mentioned that Sudan has high burden of reproductive health issues; sexually transmitted infections is one of the major challenges that increase the affect on reproductive morbidity [10]. Consistent with other research the affected age group is the younger population who are at risk for sexually transmitted infections. In a study from Brazil the mean affected age is 25 years [11].

The prevalence of Trichomoniasis is 6.8% more or less almost like that seen in study done in Upper Egypt the prevalence was 8.7% and far less than what proved in study done in Lagos[12], Nigeria found that the prevalence is high 74.5%. Trichomoniasis is reported to be low among the Muslim population in comparison to non-Muslim groups in India, due to conservative life style and it is not a case here in our study [13]. The history of sexual transmitted infections and received treatment was 14.5% compared to 25% in a study in Zimbabwe [14].

Trichomonas vaginalis is likely the most prevalent nonviral sexually transmitted infection, affecting an estimated 3.7 million women and men

in the United States. Health disparities are prominent in the epidemiology of trichomoniasis, as African Americans are >4 times more likely to be infected than persons of other races [15].

Van Der Pol et al. mentioned that *T.vaginalis* is a prevalent sexually transmitted infection (STI). Diagnosis has historically relied on either microscopic analysis or culture, the latter being the previous gold standard [16].

Trichomonas vaginalis is among the most common causes of protozoal infections, and it is also a common cause of symptomatic vaginitis in women. It is a motile organism that lives in the lower genitourinary tract of females and the prostate and urethra of men [17].

Trichomoniasis has been found to be associated with various health complications including pelvic inflammatory disease (PID), significant pregnancy complications, cervical cancer, prostatitis, infertility and the acquisition of human immunodeficiency virus [18].

Conclusion

Trichomonas vaginalis was more prevalent in females than in males. The most affected age was ranging from (31-40) years. The results showed statistically significant findings.

Conflict of interest

We declare that we have no conflict of interest.

Financial disclosures: nothing to declare

References

- 1-**World Health Organization.** Global prevalence and incidence of selected curable sexually transmitted diseases: overview and estimates (2001). Available at: <https://apps.who.int/iris/handle/10665/66818>.
- 2-**Petrin D, Delgaty K, Bhatt R, Garber G.** Clinical and microbiological aspects of *Trichomonas vaginalis*. Clin Microbiol Rev 1998 ;11(2):300-17.
- 3-**Cudmore SL, Delgaty KL, Hayward-McClelland SF, Petrin DP, Garber GE.** Treatment of infections caused by metronidazole-resistant *Trichomonas vaginalis*. Clinical Microbiology Reviews 2004; 17 (4): 783-93.
- 4-**Peterson K, Drame D.** Iatrogenic transmission of *Trichomonas vaginalis* by a traditional healer. Sex Transm Infect 2010; 86(5):353-4.
- 5-**World Health Organization.** Global incidence and prevalence of selected curable sexually transmitted infections – 2008. Department of Reproductive Health and Research. Available at: https://apps.who.int/iris/bitstream/handle/10665/75181/9789241503839_eng.pdf.
- 6-**Kafi SK, Mohamed AO, Musa HA.** Prevalence of sexually transmitted diseases (STD) among women in a suburban Sudanese community. Ups J Med Sci 2000;105(3):249-53.Joo H-S, Otto M.
- 7-**Abdelaziz ZA, Ibrahim ME, Bilal NE, Hamid ME.** Vaginal infections among pregnant women at Omdurman Maternity Hospital in Khartoum, Sudan. J Infect Dev Ctries 2014 Apr 15;8(4):490-7.
- 8-**Postema EJ, Remeijer L, van der Meijden WI.** Epidemiology of genital chlamydial infections in patients with chlamydial conjunctivitis; a retrospective study. Genitourin Med 1996;72(3):203-5.
- 9-**Omer EF, Catterall RD, Ali MH, el-Naeem HA, Erwa HH.** Vaginal trichomoniasis at a sexually transmitted disease clinic at Khartoum. Trop Doct 1985;15(4):170-2.
- 10-**Abd Allha HA, Fazari A, Ahmed KY.** Trichomoniasis in Pregnant Sudanese Pregnant Women at Tertiary Obstetric. Open Journal of Obstetrics and Gynecology 2016; 6: 539-543.
- 11-**Gondo D, Duarte M, Silva M, Parada, C.** Abnormal Vaginal Flora in Low Risk Pregnant Women Cared for by a Public Health Service, Prevalence and Association with Symptoms

- and Finding from Gynecological Examination. *Revista Latino-Americana de Enfermagem* 2010; 18: 919-927.
- 12-**Sullam SA, Mahfouz AA, Dabbous NI, El-Barrawy M, El-Said MM.** Reproductive Tract Infection among Married Women in Upper Egypt. *Eastern Mediterranean Health Journal* 2001; 7: 130-146.
- 13-**Anorlu RI, Fagbenro Beyioku AF, Fagorala T, Abudu OO, Galdanci HC.** Prevalence of *Trichomonas vaginalis* in Patient with Vaginal Discharge in Lago, Nigeria. *Nigerian Postgraduate Medical Journal* 2001; 8: 183-186.
- 14-**Kurewa NE, Mapingure M, Munjoma M, Chirenje M, Rusakaniko S, Pedersen B.** The Burden and Risk Factors of Sexually Transmitted Infection and Reproductive Tract Infection among Pregnant Women in Zimbabwe. *BioMed Central* 2010;10: 127.
- 15-**Kissinger PJ, Gaydos CA, Seña AC, Scott McClelland R, Soper D, Secor WE, et al.** Diagnosis and Management of *Trichomonas vaginalis*: Summary of Evidence Reviewed for the 2021 Centers for Disease Control and Prevention Sexually Transmitted Infections Treatment Guidelines. *Clin Infect Dis* 2022 ;74:S152-S161.
- 16-**Van Der Pol B, Rao A, Nye MB, Chavoustie S, Ermel A, Kaplan C, et al.** *Trichomonas vaginalis* Detection in Urogenital Specimens from Symptomatic and Asymptomatic Men and Women by Use of the cobas TV/MG Test. *J Clin Microbiol* 2021 20; 59(10):e0026421.
- 17-**Schumann JA, Plasner S.** Trichomoniasis. 2021 Dec 13. In: StatPearls [Internet]. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK534826/>.
- 18-**Mabaso N, Abbai NS.** A review on *Trichomonas vaginalis* infections in women from Africa. *S Afr J Infect Dis* 2021;36(1):254.

Taha QH, Mohamed FA, Mokhtar F, Abdalrahim H, Alawad SA, Wedatallah EM, Ahmed AI, Idris AAA. Prevalence of *Trichomonas vaginalis* infection among Sudanese patients with different genders in Khartoum state, Sudan. *Microbes Infect Dis* 2022; 3(4): 1082-1086.