

A STUDY ON PREVALENCE OF TRICHOMONIASIS AMONG FEMALE PATIENTS ATTENDING A TERTIARY CARE HOSPITAL OF BIHAR

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Received : 13/01/2023
Received in revised form : 11/02/2023
Accepted : 27/02/2023

Keywords:
Prevalence, Trichomoniasis.

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DOI: 10.47009/jamp.2023.5.3.18

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (3); 81-84



Abstract

Background: Worldwide, researchers have reported a prevalence of 1.3%–16.5% of *T. vaginalis* in reproductive tract infections. Therefore, the present study was designed to assess the prevalence of trichomoniasis in HIV-infected females and patients with cervical intraepithelial neoplasia (CIN)/cervical carcinoma. **Materials and Methods:** An observational Study with cross-sectional design was conducted in the department of Microbiology, Darbhanga Medical College, Laherisrai, Darbhanga, and Bihar. 200 patients were selected from various wards of the hospital over a period of 1 year, between January 2022 to December 2022. Both vaginal swabs and urine samples were subjected to wet smear examination and culture in TYIS (Trypticase yeast extract iron serum) medium for detection of parasites. Statistical significance was calculated by the chi-square test. **Result:** A total of 200 females were enrolled in the study, divided in four groups, with 50 participants in each group. *Vaginalis* was not detected in any of the 50 carcinoma cervix patients or 50 HIV seropositive patients, either by wet mount, culture of vaginal swab or urine samples. Five (10%) out of 50 patients with symptoms and signs suggestive of trichomoniasis, were positive for *T. vaginalis* by culture of vaginal secretions, while wet mount microscopy could detect four (8%) cases. One out of these five patients was also positive by direct smear examination and culture of urine sample. Out of 50 asymptomatic patients, two (4%) were positive for *T. vaginalis* by vaginal culture, while only one (2%) was positive by wet mount examination of vaginal fluid. No urine sample was positive either by the direct smear or the culture technique. **Conclusion:** The study indicated that none of the 50 cervical carcinoma or 50 HIV seropositive Indian patients harbored *T. vaginalis*. Trichomoniasis was significantly associated with being a housewife, belonging to the middle socioeconomic status, and nonuse of contraception.

INTRODUCTION

The sexually transmitted parasitic agent *Trichomonas vaginalis* has been responsible for an estimated 156 million new cases of trichomoniasis in 2016.^[1] The World Health Organization estimates trichomoniasis to account for almost half of all curable sexually transmitted infections (STIs).^[2,3] Worldwide, researchers have reported a prevalence of 1.3%–16.5% of *T. vaginalis* in reproductive tract infections.^[4,5]

In symptomatic females, the disease is characterized by copious vaginal discharge, severe pruritus, dysuria, dyspareunia, or lower abdominal pain and sometimes with punctuate hemorrhagic lesion of the cervix known as “strawberry cervix.” In 25%–50% of women, it can be asymptomatic.^[6]

Trichomoniasis is associated with adverse pregnancy outcomes such as preterm rupture of membranes, preterm birth, and low birth weight babies.^[2] It can also lead to infertility and pelvic inflammatory disease. An association between *T. vaginalis* and cervical neoplasia has also been reported.^[7] *T. vaginalis* also increases viral load and transmission of HIV by local accumulation of HIV-infected cells or HIV-susceptible cells such as lymphocytes and monocytes.^[2] In some circumstances, it may have a major impact on the epidemiologic dynamics of HIV and other STIs. Hence, it is important to diagnose correctly and treat it.

Cervical cancer is a major gynecological cancer in developing countries like India. There are both positive and negative reports regarding association between *T. vaginalis* and cervical neoplasia.^[8,9]

Throughout the world, 75% of HIV-1 infections are acquired through sexual contact. Physical trauma, damage from other sexually transmitted pathogens, and a vigorous host immune response, compromise the integrity of mucosal surfaces, thereby, potentially enhancing the susceptibility to infection. Trichomonas has not only been shown to be a co-factor for acquisition of HIV, but also increases the viral load and transmission of HIV.^[10,11]

Although both cervical cancer and HIV/ (AIDS) Acquired immune deficiency syndrome are common in India, the reports regarding prevalence of trichomoniasis in Indian women with cervical cancer or HIV are lacking. Therefore, the present study was designed to assess the prevalence of trichomoniasis in HIV-infected females and patients with cervical intraepithelial neoplasia (CIN)/cervical carcinoma.

MATERIALS AND METHODS

An observational Study with cross-sectional design was conducted in the department of Microbiology, Darbhanga Medical College, Laherisrai, Darbhanga, and Bihar. 200 patients were selected from various wards of the hospital over a period of 1 year, between January 2022 to December 2022. Patients were categorized into: Group I - Carcinoma cervix/CIN (N = 50), Group II - HIV seropositive (N = 50), Group III - women with signs and symptoms suggestive of trichomoniasis (N = 50), and Group IV - apparently healthy women, without any signs or symptoms of trichomoniasis, attending the postnatal or fertility clinic (N = 50). Their age, occupation, clinical, obstetrical history, and relevant per speculum findings were recorded on a preplanned Performa. Both vaginal swabs and urine

samples were subjected to wet smear examination and culture in TYIS (Trypticase yeast extract iron serum) medium for detection of parasites. [12] Statistical significance was calculated by the chi-square test.

RESULTS

A total of 200 females were enrolled in the study, divided in four groups, with 50 participants in each group. The demographic details of the patients have been given in [Table 1]. Trichomoniasis was significantly associated with being a housewife, belonging to the middle socioeconomic status, and non-use of contraception. However there was no significant association with parity. Bleeding per vaginam was the most common feature in CIN/cervical cancer patients, whereas, in the rest of the groups foul smelling vaginal discharge was the most common feature followed by pruritus and dysuria [Table 2].

T. Vaginalis was not detected in any of the 50 carcinoma cervix patients or 50 HIV seropositive patients, either by wet mount, culture of vaginal swab or urine samples. Five (10%) out of 50 patients with symptoms and signs suggestive of trichomoniasis, were positive for T. vaginalis by culture of vaginal secretions, while wet mount microscopy could detect four (8%) cases. One out of these five patients was also positive by direct smear examination and culture of urine sample. Out of 50 asymptomatic patients, two (4%) were positive for T. vaginalis by vaginal culture, while only one (2%) was positive by wet mount examination of vaginal fluid. No urine sample was positive either by the direct smear or the culture technique.

Table 1: Distribution of patients from all the four groups based on various demographic details and obstetric history

Variable	Groups (with 50 patients in each group)			
	I	II	III	IV
Mean age (SD)	57.2 (11.3)	31.1 (9.4)	36.7 (4.3)	35.4 (8.2)
Occupation				
Housewife	42	45	39	41
Others	8	5	11	9
Socio-economic status				
Upper	3	0	1	4
Middle	17	38	41	33
Lower	30	12	8	13
Contraception				
Barriers	5	2	13	17
Others	1	2	7	8
Nil	44	46	30	25
Parity				
0	0	2	7	10
1	2	7	8	10
2	11	21	18	12
3	17	19	10	9
>3	20	11	7	9

Table 2: Distribution of patients from Group I, II, and III based on their symptomatology and signs found of per vaginam examination

Variable	Groups (with 50 patients in each group)			
	I	II	III	IV
Signs				

Discharge	7	8	32	11
Cervical erosion	0	6	16	2
Cervical atrophy	0	3	11	0
Cervical hypertrophy	11	1	2	0
Uterine prolapsed	0	1	1	1
PID	0	0	5	1
Bleeding on touch	41	0	0	0
Cervical growth	45	0	0	0
Symptoms				
Discharge per vagina	15	19	48	-
Dysuria	17	8	17	-
Pruritis	2	10	33	-
Dyspareunia	3	0	10	-
Bleeding per vagina	41	0	4	-

DISCUSSION

Trichomoniasis is one of the most common non-viral STD. In the present study, cervical carcinoma and HIV seropositive patients were of mean age 56.2 ± 8.5 years and 31.9 ± 6.3 years, respectively. The present study supported the well-known fact that carcinoma cervix occurred in old age patients, while most of the HIV-infected individuals were younger.^[13] In the present study, majority of the patients with signs and symptoms suggestive of trichomoniasis were in their fourth decade of life. This is in agreement with the earlier studies where maximum incidence of trichomoniasis has been reported in age group of 20-45 years.^[14]

In the present study, cervical carcinoma patients are mainly from lower socioeconomic status. Other studies have also shown a significant association between lower socioeconomic status and development of cervical carcinoma.^[15] Also, majority of cervical carcinoma patients were multigravida (≥ 4) as compared to HIV seropositive patients or patients with symptoms of trichomoniasis.

In our study, trichomoniasis was significantly associated with being a housewife, belonging to middle socioeconomic status, and non-use of contraception. Many studies have found significant association with poverty and contraception.^[16,17]

T. vaginalis was not detected in any of the 50 cervical carcinoma (CIN) patients. In contrast, there are few studies, whereby, higher prevalence of *T. vaginalis* in cervical carcinoma patients has been reported. It is true that inflammatory changes may mimic dysplasia. However, the patients in our study group were diagnosed as CA cervix or CIN after cervical biopsy. The cervical biopsy had been taken after the patient was treated, usually with metronidazole or tinidazole. However, the time of sampling in most of the patients was at least a month after treatment and thus may not have affected the isolation of *Trichomonas*. In the present study, *T. vaginalis* was not detected in any of the 50 HIV seropositive patients. The present study is in agreement with the study from Tanzania by Kliner S et al,^[16] wherein *T. vaginalis* infection was not associated with HIV infection. Many studies have shown pre-infection with *T. vaginalis* as a risk factor

for acquisition of HIV infection and increased viral load.^[2, 10-11]

In the present study, the overall prevalence was 14%. *T. vaginalis* was isolated in 10% of symptomatic and 4% of asymptomatic patients. *T. vaginalis* prevalence varies widely based on various factors. Kaul et al,^[18] have shown an overall prevalence of 3.8%, out of which 4.09% were symptomatic and 3.45% were asymptomatic patients. Similarly a study by Yadav et al,^[19] showed an overall prevalence of 4.2%, and *T. vaginalis* was isolated in 4.15% of symptomatic and 4.25% of asymptomatic patients. This difference in prevalence might be explained by different socioeconomic status, different sexual habits, and practices of people in various geographical regions.

CONCLUSION

The study indicated that none of the 50 cervical carcinoma or 50 HIV seropositive Indian patients harbored *T. vaginalis*. However, *T. vaginalis* was reported in otherwise five asymptomatic and two symptomatic subjects for trichomoniasis. Trichomoniasis was significantly associated with being a housewife, belonging to the middle socioeconomic status, and nonuse of contraception.

REFERENCES

1. Rowley J, Vander Hoorn S, Korenromp E, Low N, Unemo M, Abu-Raddad LJ, et al. Chlamydia, gonorrhoea, trichomoniasis and syphilis: Global prevalence and incidence estimates, 2016. *Bull World Health Organ* 2019;97:548-62P.
2. Schwebke JR, Burgess D. Trichomoniasis. *Clin Microbiol Rev* 2004;17:794-803.
3. Jamali R, Zareikar R, Kazemi A, Yousef S, Ghazanchaei A, Estakhri R, et al. Diagnosis of *Trichomonas vaginalis* infection using PCR method compared to culture and wet mount microscopy. *Int Med J Malaysia* 2006;5:1-8.
4. Anh PK, Khanh NT, Ha DT, Chien DT, Thuc PT, Luong PH, et al. Prevalence of lower genital tract infection among women attending maternal and child health and family planning clinics in Hanoi, Vietnam. *Southeast Asian J Trop Med Public Health* 2003;34:367-73.
5. García PJ, Chavez S, Feringa B, Chiappe M, Li W, Jansen KU, et al. Reproductive tract infections in rural women from the highlands, jungle, and coastal regions of Peru. *Bull World Health Organ* 2004;82:483-92.
6. Swygard H, Seña AC, Hobbs MM, Cohen MS. Trichomoniasis: Clinical manifestations, diagnosis and management. *Sex Transm Infect* 2004;80:91-5.

7. Viikki M, Pukkala E, Nieminen P, Hakama M. Gynaecological infections as risk determinants of subsequent cervical neoplasia. *Acta Oncol* 2000;39:71-5.
8. Zhang ZF, Begg CB. Is *T. vaginalis* a cause of cervical neoplasia? Results from combined analysis of 24 studies. *Int J Epidemiol* 1994;23:682-90.
9. Boyle CA, Lowell DM, Kelsey JL, Livolsi VA, Boyle KE. Cervical intraepithelial neoplasia among women with Papillomavirus infection compared to women with *T. vaginalis* infection. *Cancer* 1989;64:168-72.
10. Laga M, Manoka A, Malele B, Kivuvu M, Tulija M, Nzila N, et al . Non-ulcerative sexually transmitted diseases as risk factor for HIV-1 transmission in women: Results from a cohort study. *AIDS* 1993;7:95-102.
11. McClelland RS, Sangare L, Hassan WM, Lavreys L, Mandaliya K, Kiari J, et al . Infection with trichomonas vaginalis increases the risk of HIV acquisition. *J Infect Dis* 2007;195:698-702.
12. Sharma P, Malla N, Gupta I, Ganguly NK, Mahajan RC. Comparison of wet mount, Culture and Enzyme linked Immunosorbent assay for the diagnosis of trichomoniasis in women. *Trop Geogr Med* 1991;43:257-61.
13. Susan CU, Hyejin KO, Denise JJ, Joseph WH, Paula S, Jean A, et al . Prevalence, incidence and persistence or recurrence of trichomoniasis among HIV positive and among HIV negative women at high risk for HIV infection. *Clin Infect Dis* 2002;34:1406-11.
14. Madhi NK, Gany ZH, Sharief M. Risk factors for vaginal trichomoniasis among women in Barsa, Iraq. *East Mediterr Health J* 2001;7:918-24.
15. Sorvillo F, Smith L, Kerndt P, Ash L. *Trichomonas vaginalis* , HIV and Africans-Americans. *Emerg Infect Dis* 2019s;7:927-32.
16. Klinqer EV, Kapiquasn, Sam NE, Aboud S, Chen CY, Ballard RC, et al . A community based study of risk factors for *T. vaginalis* infection among women and their male partners in Moshi Urban district, North Tanzania. *Sex Transm Dis* 2020;33:712-8.
17. Sutton M, Sternberg M, Koumans EH, McQuillan G, Berman S, Markowitz L. The Prevalence of *Trichomonas vaginalis* Infection among Reproductive-Age Women in the United States, 2001-2004. *Clin Infect Dis* 2021;45:1319-26.
18. Kaul P, Gupta I, Sehgal R, Malla N. *Trichomonas vaginalis* : Random amplified polymorphic DNA analysis of isolates from symptomatic and asymptomatic women in India. *Parasitol Int* 2022;53:255-62.
19. Yadav M, Dubey ML, Gupta I, Malla N. Cysteine proteinase 30 (CP30) and antibody response to CP30 in serum and vaginal washes of symptomatic and asymptomatic *Trichomonas vaginalis* -infected women. *Parasite Immunol* 2023;29:359-65.