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A study of *Trichomonas vaginalis* infection among women at Wasit Province, Iraq

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Abstract---Trichomoniasis is a common sexually transmitted disease (STD) caused by *Trichomonas vaginalis*. The current study was conducted during the period from January 2022 to July 2022 to investigate the infection of *Trichomonas vaginalis* in Iraqi women at Wasit province . A total of 100 women of different ages were enrolled in this study. The vaginal swabs were collected from each woman. A consent form which included age, area of residence, educational level , in addition to the symptoms were obtained from the participants. By Wet mount examination , 4% infection rate with *Trichomonas vaginalis*. The age class of 20-30 years had the highest rate of infection (3%); while infection among patients from urban resident (3%) was higher than of rural resident (1%). Women with primary educational level showed higher prevalence of *Trichomonas vaginalis* (2%) than other levels and status. About 86 % of the studied women had vaginal discharge, while 81% of them had vulvular itching . Dysuria was Other less frequent symptom. These results indicated the low prevalence of *Trichomonas vaginalis* among Iraqi women at Wasit province

Keywords---*Trichomonas vaginalis* infection, women, Wasit Province, Iraq.

Introduction

Trichomonas vaginalis is a protozoan parasite of the human urogenital tract that result in trichomoniasis [1] .Women symptoms range from asymptomatic to serious vaginitis . Often men are asymptomatic trichomoniasis carriers [2] . Infection of *T. vaginalis* is the most common non-viral sexually transmitted infection in the world . According to the World Health Organization (WHO), About 90 % of these infections occurred among people living in resource-limited settings [3] . Trichomoniasis able to increase the risk of getting or spreading other sexually

transmitted disease. *Trichomonas vaginalis* has been shown in some studies to increase vulnerability to bacterial vaginosis and induce genital inflammation, all of which increase the risk of HIV infection or transmission to a sexual partner [4]. Infection with *T. vaginalis* was found to be related to infertility [5,6]. Because of salpingitis, endometritis and atypical pelvic inflammatory symptoms, *T. vaginalis* infection may result in infertility [7].

On other hand, many studies suggest that colonization of *T. vaginalis* is increased in the in the presence of bacterial vaginosis-defining phenomena, such as elevated amine production, loss of facultative Lactobacilli, and increased pH [8]. It can establish a relationship with some types of bacteria implicated in bacterial vaginosis [9]. The presence of such kind of bacteria has been demonstrated in trichomonad isolates from different geographical areas. Even though *T. vaginalis* and some types of bacteria can induce disease independently in the vagina, their association has been shown to have important consequences for the pathogenicity of each of them [10]. Neutrophils, the most inflammatory cells in the immune system, are abundantly recruited to the vagina during *T. vaginalis* infection. It is also the most abundant immune cell type in the blood and because of its extravasation from the blood, they are the first cells recruited to the site of most infections [11]. While within the infected tissue, their effector functions destroy pathogens effectively and eventually limit their spread [12].

Materials and Methods

Vaginal swabs were included 100 sample and it collected from women who attended private clinic during the period from January 2022 to July 2022. The vaginal sample were placed in a lithotomy position and the sterile metal speculum was inserted into vagina without any lubricant or solution. Swabs were taken from the lateral wall of vagina and placed in tube containing 0.5 ml physiological saline solution (0.9% NaCl) for wet mount examination. The tube was carried to the laboratory, then gently shaken and a slide was prepared for immediate examination under light microscope using 10X and 40X objectives to detect the motile organism. At least 20 fields were examined to recognize the motile trophozoite of *T.vaginalis* [13].

Results

The rate of *T.vaginalis* infection was (4%). According to women age higher rate (3%) was found among women aging from 20 to 30 years, while low rate (1%) was recorded among women aging from 31 to 40 years, as shown in table (1). Table (2) shows the rate of *T.vaginalis* infection in relation to residency of women enrolled in the study, high rate (3%) of *T.vaginalis* trophozoites were recorded in vaginal discharges from the center of Wasit province (urban area) compare to 1% in samples of women from rural area. Table (3) shows the rate of *T.vaginalis* infection in relation to level of education of women involved, the prevalence of infection in women with high education level 1% and 1% in women with Moderate education level, while the infection rate in women with low education level was 2% . In the present results, the main symptoms in women infected with *T. vaginalis* were vaginal discharge, itching (3%, 4% respectively), followed by dysuria (1%) as shown in (Table-4).

Table (1): The distribution of *T. vaginalis* among women according to the age

Age groups / Years	Total No. Examined	(%)	No. of positive	% of positive
< 20	9	9%	0	0 %
20-30	35	35%	3	3%
31- 40	33	33%	1	1%
41- 50	15	15%	0	0%
>51	8	8%	0	0%
Total	100	100%	4	4%

Table (2): Frequency of of *T. vaginalis* infection in relation to women residency

Residency	Total No. Examined	(%)	No. of infected women	(%)
Rural	59	59%	1	25%
Urban	41	41%	3	75%
Total	100	100%	4	100%

Table(3): Distribution of *T.vaginalis* infection according to level of education

Level of education	Total No. Examined	(%)	No. of infected women	(%)
High	17	17%	1	1%
Moderate	39	39%	1	1%
Low	44	44%	2	2%
Total	100	100%	4	4%

Table (4): Distribution of *T. vaginalis* infection according to signs and symptoms

	Vaginal discharge	Itching	Dysuria
Frequent No.	86	81	32
<i>T. vaginalis</i> +ve	3	4	1
(%) of positive	3%	4%	1%

Discussion

The best way for assessing the efficacy of any laboratory method should be characterized by high rate of sensitivity, specificity and accuracy [14], so obtaining rate of *T. vaginalis* infection in the present study using wet preparation. From the results of the current study it is obvious that the rate of *T. vaginalis* infection is low when it was compared to (8.5%), (10.2%), (16.5%) recorded in Kirkuk city [15,16]. Controversy to (61.25%) recorded in the same province [17]. The rate of *T. vaginalis* infection in our study (4%) was higher than (1.33%) recorded in Tikrit, and lower than (7.5%), (13.0 %) and (19.6 %) recorded in Mosul, Basra and Baghdad respectively by [18,19 ,20]. *Trichomonas vaginalis* infection rate in Turkey and USA were (40.3 %), (46.9 %) are not in agreement with the rate of the present study. In *Trichomonas vaginalis* infection rates can be explained by different causes such as differences in size of the study, age groups,

type of the laboratory methods , hygienic condition and sanitation in the study community [21,22]. High rate of *T. vaginalis* infection among women may be explained by high rate of atrophic vaginitis .The highest incidence of *T. vaginalis* was found in the age group (20–30) and (31-40) years which is in agreement with a study in Baghdad, Iraq [23] and in years Dohok province, Iraq [24], and may be related to the greater sexual activity of these two age groups. Lower rate was found in women less than 20 years old. This is probably related to their samples with low level of sexual activity (most of them unmarried). The rates observed in this study are lower than those reported in other study [25,26,27].

Islamic rules and habits prevent non-marital sexual relationship this may be related to the lower rates of this sexually transmitted protozoan infection when compared to the more permissive non-Islamic countries. A higher rate of infection among sexually active women has been reported [28], multiplicity of sexual partners and life style leading to an increase of transmission [29]. The prevalence of infection in women live in urban areas (3%)infected with *T. vaginalis*, while the infection rate in women live in rural was 1% and this may due to population density , low personal hygiene and social habits non-compliance in urban. Among different parameters included in recent study, marriage age only was reflected significant effect on infection, which it is in agreement with [30]. This suggest that reproductive hormone levels may be partly responsible for high prevalence of *T. vaginalis* and this hormone decreased in older women and increased in young women. Also overall prevalence of infection in women with low education level 2% women infected with *T. vaginalis*, while the infection rate in women with high education level was 1% of women infected with *T. vaginalis*.

Regarding more dominancy signs and symptoms burning sensation and itching in the present study can be interpreted by the parasite colonization in the vagina, surface trichomonad protein and movement by the aid of anterior four flagella, in addition to axostyle that extend outside of the parasite causing irritation of the lining tissue of the vagina and evoking mast cells for secretion the chemo-tactic substances which had role in increasing IgE level mostly ended by pruritus, erosions and sever genital itches [15].

Conclusions

Under clinical examination women with abnormal vaginal discharges, burning sensation and genital itches should be checked for *T. vaginalis* using high sensitive and specific tests: direct wet amount preparations for detecting vaginal thrush.

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