Trichomonas vaginalis Among Women in Sulaimania Governorate-Iraq

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Abstract

Trichomonas vaginalis infection is one of the sexually transmitted diseases. It is a health problem all over the world, including Iraq. The parasite usually infected in the vagina and urethra, but could involve the endocervix. Aim: This study aim to show the prevalence of *Trichomonas vaginalis* in the women that have vaginal discharge. The study included (600) women attended the gynecological out patient clinic in Sulaimania obstetrical and gynecological teaching hospital and rozhan out patient clinic through the period from January 2007 till September 2007. Per vaginal examination was performed for each patient using a sterile cuscos speculum. Two high vaginal swabs were obtained from each patient one for direct microscopic examination and other for *Trichomonas vaginalis* culture. The prevalence of T. vaginalis was 10(1.66%) The infection rate between pregnant women was 8(1.77%) higher than that of non-pregnant women 2(1.33%). The highest is found in women at the age group (26-35) years in which the infection rate was 5(2.48%). The rate of infection was higher among uneducated women 9(1.5%) than educated ones. The higher rate of *T.vaginalis* was obtained from women with white to gray (frothy discharge) 6(1.57%) and with yellow to green discharge 4(1.81%) and those with bad odor was 8(2.02%) was higher than odourless discharge 2(0.97%). In positive cases of *T. vaginalis* , 6(60%) had white to gray vaginal discharge, and the rate of bad odour (80%) and without bad odour (20%). The rate of infection among illiterate women was higher than those with school education and no positive cases were detected among those with college education. In cultures the rate of *T. vaginalis* was (5%) while in direct wet mount examination was (1.66%). Candida albicans were detected in 167(83.5%) in selected culture media of *T. vaginalis*.

المشعرات المهبلية في محافظة السليمانية _ العراق

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المستخلص

الاصابة بالطفيليات المشعرية هي أحدى الامراض المنقولة جنسيا وهي مشكلة صحية في كافة أنحاء العالم ومن ضمنها العراق ، الطفيلي عادة يصيب المهبل والاحليل وعنق الرحم . أن هدف الدراسة هو لبيان مدى انتشار المشعرات المهبلية في النساء اللاتي يشكون من الإفرازات المهبلية . أن هذا الطفيلي بشكل عام يصيب المهبل والاحليل وأحيانا قد يصيب عنق الرحم.
شملت الدراسة 600 أمرأة ممن يراجعن العيادة الخارجية في مستشفى الولادة التعليمي في محافظة السليمانية ومركز روزان من كانون الثاني 2007 ولغاية شهر أيلول 2007 . تم أجراء الفحص المهبلي لكل مراجع باستخدام منظار كسكس (cuscos). تم أخذ نموذجين من المهبل لإجراء الفحص المباشر والأخر لإجراء الزرع . وجدت بان نسبة شيوع أنتشار طفيلي المشعرات المهبلية كان 10(1,66%) من مجموع فحص (600) مسحة مهبلية. كانت نسبة أصابة الحوامل 8(1,77%) أعلى من النساء غير الحوامل و 2(1,33%) وقد تركزت الاصابات في النساء اللواتي تتراوح أعمارهن من بين (26_35سنة) وان معدل

الاصابة لديهم كانت 5(2,48%) وكانت نسبة الاصابة في النساء اللاتي يشكين من أفرازات بيضاء الى رصاصي (1,57%) وان نسبة الاصابة في اللواتي يشكون من الروائح الكريهة كانت 8(2,02%) أعلى من اللواتي يشكين من أفرازات عديمة الرائحة 2(0,97%) وقد تبين أيضا أن في الحالات الموجبة للطفيلي كانت نسبة الروائح الكريهة (80%) وبدون رائحة كريهة (20%) وكذلك في الحالات الموجبة (60%) كانت لديهم أفرازات بيضاء الى رمادية وفي الوسط الزرعي كانت نسبة الاصابة الموجبة (5%) وبينما في الفحص المباشر كانت (1,66%) وان المبيضات المهبلية وجدت في 167 (83,5%) في الوسط الاختياري .

Introduction

Trichomonas vaginalis is a unicellular protozoan flagellate parasite, that has only the trophozoites stage. It has no cystic stage in its life cycle. Infection with the organism, frequently asymptomatic, can cause vaginitis in women and urethritis in men. Vaginal discharge is often yellowish-green in color, it may be associated with vulval itching, burning, and redness and swelling (Schmidt and Roberts, 2000). The organism grows best at (35 -37°C) under anaerobic condition, the optimal pH for growth in vitro (5.5-6.0) Transmission of *T.vaginalis* is by sexual intercourse, contaminated towels, and toilet articles (Jawetz et al, 2001). The diagnosis and isolation of the *T. vaginalis* from the vaginal secretion can be done by several methods, of these : wet mount preparation, immunoflourescence test (Krieger et al, 1985), Latex slid assay and enzyme linked immunosorbent assay (Lisi et al, 1988) and Culture media (Oconnor and Adler, 1979). The special pH required for cultivation in vitro is ranging from (5.5- 6.6). This suggests that T. vaginalis is more severe in women with low vaginal acidity. The organism does not survive at normal vaginal acidity of pH 3.8-4.4 (Jawetz et al, 2001). The present study was planned to show the prevalence of Trichomonas vaginalis among females with vaginal discharge, and to compare the efficacy of direct wet mount and culture methods

Materials and Methods

From January 2007 till September 2007, 600 vaginal swabs were collected from patients who attended the Gynecological Out-Patients Clinic in Sulaimania Maternity Teaching Hospital and Rozhan Gynecological Private Clinic in Sulaimania Governorate, informative questionnaire was organized to each patient. Inclusion criteria: All married women, pregnant and non pregnant with vaginal discharge, aged from 16-55 years old.

Sample Collection

In pregnant women, accumulated discharge and secretion were wiped from the vestibule of the vulva and little deep in the vagina with two sterile cotton swabs, while in non pregnant women, vaginal discharge was carefully collected from posterior vaginal fornix after putting a patient at lithotomic position and taking two swabs after opening the vagina by a sterile speculum. The two swabs immersed in a tube with 1 ml of a sterile normal saline; one of them for direct microscopic examination, the other swab was used for culture.

Examination of the Specimen

The swabs were examined for detection of *T. vaginalis* by wet mount examination. Smears made from vaginal swabs were stained with Leishman's and Giemsa's stain. The culture used was *Trichomonas* selective medium, product of Oxid factory (Murray, et al. 1999).

Statistical Analysis

Chi square has been used for the statistical analysis, to decide the significant of the

results. The student t- test was used to show the difference between any two groups.

Results

Out of 600 examined vaginal swabs by wet mount technique, ten (1.66%) were found to be infected with *T.vaginalis*. Among 450 pregnant women, 8 (1.77%) patients showed positive results of *T.vaginalis* infection, while 150 non-pregnant women, 2 (1.3%) were positive for *T.vaginalis* infection. The results were statistically not significant, Table (1).

Table (1):- Prevalence of *T.vaginalis* among pregnant & non-pregnant women.

Patients population	No. Examined	Positive cases	
		No.	%
Pregnant	450	8	1.77
Non-pregnant	150	2	1.33
Total	600	10	1.66

χ^2=0.133 d.f. =1 P=>0.05

Considering the age groups and their relation with the distribution of positive cases of *T. vaginalis*, as shown in table (2), the highest rate of infection between the age groups 26-35 years was 5(2.48%), followed by 36-45 years 2(1.45) and 46-55 years age groups was 1(1.25 %), while the lowest rate of infection between 16-25 years was 2(1.10%), the results was statistically not significant, as shown in Table (2).

Table (2):- Relationship between age groups and infection with *T. vaginalis*.

Age (year)	Total No. examined	Positive cases	
		Number	%
16-25	181	2	1.10
26-35	201	5	2.48
36-45	138	2	1.45
46-55	80	1	1.25
Total	600	10	1.66

χ^2=1.299 d.f. =3 P=>0.05

The color of vaginal discharge due to *T. vaginalis* infection is shown in Table (3). *In white to gray colour vaginal discharge 6(1.57%) were positive for T. vaginalis while in yellow to green discharge 4(1.81%) were positive. It is indicated that* in 6 (60%) positive *T. vaginalis* the vaginal discharge of women were white to gray, while in 4 (40%) positive patients the vaginal discharge were yellow to green. Statistically there was no significant difference between *T. vaginalis* infection and colour of vaginal discharge.

Table (3):- The relation between vaginal discharge colour and *T. vaginalis*.

Discharge colour	Number examined	Positive cases No.	Positive percentage	
			% from total Cases	% from positive cases
White to gray	380	6	1.57	60
Yellow to green	220	4	1.81	40
Total	600	10	1.66	100

χ^2 =0.048 d.f.=1 P=>0.05

The relation between vaginal discharge odor and the infection with *T. vaginalis* shown in Table (4): In bad odor vaginal discharge 8 (2.02%) were positive for *T. vaginalis* while in odorless vaginal discharge 2 (0.97%) cases *T. vaginalis* were detected. It is indicated that 8(80%) of *T. vaginalis* cases had bad odour vaginal discharge while 2(20%) were odorless.

Table (4):- The odour of vaginal discharge in *T. vaginalis* infection.

Discharge odour	Number examined	Positive cases No.	Positive percentage	
			% from total cases	% from positive cases
Bad odour	395	8	2.02	80
Odorless	205	2	0.97	20
Total	600	10	1.66	100

χ2 =0.907 d.f.=1 P=>0.05

The prevalence of *T. vaginalis* infection was highest in uneducated women 9 (2.19%), followed by women who had school education was 1 (0.55%), and college education was 0. It is indicated that 90% of *T. vaginalis* cases were among uneducated women, 10% among those who had school education and no positive cases was seen among those with college education (Table 5).

Table (5):- The relation between *T. vaginalis* infection and educational level.

Level of education	Number examined	Positive cases No.	Positive percentage	
			% from total cases	% from positive cases
Illiterate	410	9	2.19	90
School	180	1	0.55	10
College	10	0	0	0
Total	600	10	1.66	100

$\chi 2=0.173$ d.f.=2 P =>0.0

Table (6): Shows that out of 200 vaginal swabs cultured in Trichomonas selective medium 10 (5%) were positive for *T.vaginalis*, 167 (83.5%) for *Candida albicans* and 23 (11.5%) were negative.

Table (6):- Finding of *T. vaginalis* culture.

Organism	No. examined (200)	Percentage (%)
T. vaginalis	10	5
C. albicans	167	83.5
Negative	23	11.5

Discussion

In the present study, out of 600 women examined, 10(1.6 %) were found to be infected with *T.vaginalis*. This finding is in agreement to that reported with some studies, 1.33% in Tikrit (Al-Somaeday, 2006), 1.6% in Baghdad (Al-Ani, 2005) and 0.99% in Mosul (Al-Jamaly, 2005); while it is lower in comparison to other workers. In kirkuk, Sulyman (2008) found the rate of *T. vaginalis* was (2.8%) among women with vaginal discharge; while Kadir, et al. (2006) found the rate of infection was (29.05%) among women attended private clinics in Kirkuk city. In Mosul, Habib et al, (2005) Found the prevalence of infection was (15.5%). In Baghdad, AL-Kaisi, et al. (2008) reported an incidence of vaginal trichomoniasis was (19.16%) during the period of study from 1992 to 1993 in Baghdad Medical City while AL-Mahdawy, (2006) found that the rate of the infection was (9.46%) in 370 women examined. In Erbil, Kadir et al (1988) found that the rate of the infection was (10 %) among the females with vaginal discharge, while Hamad (2009) found the rate of infection was (0.39%). The difference in the rate of

infection between this study and others may be due to the difference in the location, period of the study, sample size and laboratory technique. In a study for Sorvillo et al (2001) in New York, the prevalence of trichomoniasis was (47%), while a study done by Huppert et al (2005) proved that the prevalence of trichomoniasis in the U.S. was (23.4%). This variation can be attributed to variation of sanitation and frequently sexual relation with many partners in the western society. Among different population groups subjected to this study, the higher rate of *T.vaginalis* was found among pregnant women (1.77%) compared to non pregnant (1.33%). The higher rate of *T. vaginalis* among pregnant women than non-pregnant also reported by AL-Samarra'ie, (2002) who proved that the pregnant women were more exposed to the infection with *T.vaginalis;* Mahdi, (1996) who recorded that the pregnant women showed the highest rate of the infection and Kadir, et al.,found the rate of infection among non pregnant women was (42.55%) and among non-pregnant women was (25.15%). While AL-Kaisi, (1994) found that the infection rate of trichomoniasis in pregnant women was (9.09%) in comparison to non pregnant women (20.0%). These differences may be due to difference in sample size of pregnant women examined (66) in comparison to non pregnant ones (370). Al-Somaeday (2006) examined 300 women (103 pregnant and 197 non pregnant) who attended Tikrit General Hospital, she found the rate of infection in non-pregnant women (2.03%) but did not find positive cases among pregnant ones. Rashid (2008) found the rate of T. vaginalis (17.46%) among 100 cases of married women consulting medical clinics in Beje and Tikrit cities. The highest prevalence during pregnancy may be attributed to the pregnant women who provides high estrogen and glycogen level in the vaginal mucosa, which offers good medium for the growth of *T.vaginalis* and *T. vaginalis* may be associated with more alkaline vaginal pH value, that occurs during pregnancy due to the alteration of pH of vaginal mucosa (Fouts and Kraus, 1980). The highest prevalence of *T.vaginalis* infection was found among age group (26-35) years of age followed by (36-45) and (46-55) years the lowest in (16-25) years of age this is accordance with the study of Huppert et al, (2005) that proved the prevalence of *T. vaginalis* was highest in women over age 30 years (31.3%) than those aged 18-29 years (19.2%) and Habib et al., (2005) in Mosul found the highest rate of infection (50%) at the age group 26-35 years followed by 36-45 (26.5%), 19-25 (20.6%) and 46 and over (2.9%). This occurs due to the ability of the parasite to alternate the vaginal environment for its survival. A study done by Mahdi et al, (2001) in Basrah, showed that the highest infection rate (12.6%) was found in women among reproductive age In T. vaginalis infection white to gray discharge was found in (60%) of the infected cases, , yellow to green was reported in (40%) cases, while the clear and bloody discharge was found in equal percentage rate 0, this agree with the study done by AL-Samarra'ie, (2002) who recorded that the frothy discharge (white to gray) was in (50%) of infected cases, followed by yellowish to greenish in (40.4%), and the discharge with blood was found in (7.14%), clear discharge was found in(2.38%) of the cases, another study done by AL-Mahdawy, (2006) was found frothy white discharge (48.58%) of infected cases, yellow to

green was (40%), while the clear and bloody discharge found in equal rate (5.14%). A bad vaginal odor was noted in (80%) of women with *T. vaginalis*, and 20% of cases have no odor in their discharge, this is almost similar to a study done by AL-Samarraie, (2002) who found the bad odor was in (88.09%) and odorless discharge in (11.09%). The reason of bad odor may be because of the metabolic byproducts of anaerobic *T. vaginalis* and other anaerobic that increased the concentration during trichomoniasis to which may contribute to the bad odor discharge. The fishy discharge odor may be caused by volatilization of amine, most commonly putrescine and cadaverine, which are produced by bacterial metabolism (coexistence between Gardenrella vaginalis with *T. vaginalis*). The amine odor often increases with menses and after intercourse when the amine is volatilized by alkalinization (Eschenbach, 1986). The prevalence of *T. vaginalis* infection was highest in uneducated women (90%), followed by women who had school education was (10%), and the lowest was in women who have college education was 0, this is in accordance with those reported by WHO, (2004) which proved that the highest infection rate was 52% in illiterate, and only 3% who had a university degree; Habib et al., (2005) found the rate of infection was highest among illiterate women (61.7%) followed by primary (20.5%) and secondary and above (17.7%) in Mosul and Sulyman (2008) found the rate of infection was highest among illiterates (5.7%) followed by primary (3.5%) and secondary (5.0%) in Kirkuk. The greater positive rate of infection in culture media (5%) that direct wet mount technique (1.66%) reflects the efficacy of culture media than direct method for diagnosis of the parasite. This is in agreement with Beverly (1999) who found the rate of *T. vaginalis* in culture media (24.61%) and in wet mount (16.53%). The finding of *T. vaginalis* selective culture media was 10(5%) T. vaginalis, 167(83.5%) *Candida albicans* and 23(11.5%) was negative. This finding indicates that trichomoniasis is second problem after candiasis in Sulaimania Governorate. From the results of this study, it is concluded that the prevalence of *T .vaginalis* among married women with vaginal discharge in Sulaimanya gynecological hospital center was (1.66%). The high rate of infection was among reproductive age group (26-45) years and among those with white to grey frothy bad odor discharges. The infection rate was higher among pregnant, uneducated women than non-pregnant and uneducated ones. The rate of positive samples in culture media was greater than direct method for detection of parasite. It is recommended to carry on further studies in Sulaimania governorate and other parts of country to show the real prevalence of infection. The medical personnel must not depend on clinical symptoms alone for diagnosis of *T. vaginalis*, further investigations are required to confirm the diagnosis.

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