



Trichomoniasis Vaginalis in Women Attending Family Planning Unit in AL-Liqa'a Hospital.

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Abstract:

The prevalence and the incidence trichomoniasis and other sexually transmitted infections (STIs) correlated with risk factors among women attending family planning unit in AL-Liqa'a Hospital are determined. Two hundred and fifty (250) women complaining vaginal discharge were examined for the period from October 2010 till September 2011. From each women full history was taken including age, duration of marriage, residence, occupation, previous history of vaginal discharge and any history of STIs. Vaginal swabs tested microscopically and cultured on appropriate media. Trichomoniasis was detected in 18 (7.2%) out of 250 women included in this study. STIs were estimated in 58 (23.2%) women, and trichomoniasis represented about 31.0% of them. Forty women (69.0%), out of 58 infected women were found to be infected with other than parasitic pathogens. The highest rate of STIs was found in age between (25-29) years (32.8%). The highest rate of infection with *Trichomonas vaginalis* was found at two age intervals (25-29) and (30-34) years old (27.8%). There was a significant differences in the marriage age, occupation (house wives vs. employed), and the numbers of the sexual contact / week between the STIs infected women and uninfected women, while there was no significant difference among women infected with *T. vaginalis* and those infected with other STIs. The effect of other factors was also discussed. Finally *Trichomonas vaginalis* in women in Baghdad is one of the important STIs with a high prevalence.

Key word: Trichomoniasis, women, family planning unit, STIs.

داء المشعرات المهبليّة لدى النساء المراجعات لوحدة تنظيم الأسرة في مستشفى اللقاء.

حذام ابراهيم خليل، ازهار هاتيف القرشي، اسامة علي مردان النعيمي، سهير النعيمي
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الخلاصة

تهدف هذه الدراسة التحديد مدى انتشار داء المشعرات المهبليّة و غيره من الامراض الجنسية والوقوف على بعض عوامل خطورة الاصابة بهذه الامراض بين النساء. تم فحص ٢٥٠ امرأة لدى زيارتهن لوحدة تنظيم الاسرة في مستشفى اللقاء في بغداد خلال الفترة من تشرين الاول ٢٠١٠ ولغاية ايلول ٢٠١١. تم اخذ مسحات مهبليّة من كل امرأة استخدمت للفحص المجهرى المباشر و لزراعتها على اوساط زرعية مناسبة. دونت معلومات كاملة عن كل امرأة خضعت للبحث وشملت المعلومات عن العمر ، العمر عند الزواج، فترة الزواج، محل السكن، المهنة، التاريخ المرضي لكل امرأة وخصوصا الامراض الجنسية او اي افرازات مهبليّة ناتجة عن

الاصابة بمرض جنسي. اظهرت الدراسة اصابة ١٨ امرأة (٧,٢%) بداء المشعرات المهبليّة، فيما كان اجمالي عدد النساء المصابات بالامراض المنقولة جنسيا ٥٨ امرأة (٢٣,٢%) من مجموع ٢٥٠ امرأة خضعن للدراسة. وجد ان ٤٠ امرأة (٦٩,٠%) منهن مصابة بامراض منقولة جنسيا مسبباتها غير طفيلية (بكتيرية او فطرية) بينما وجدت الاصابات الطفيلية متمثلة بطفيلي المشعرات المهبليّة لدى ١٨ امرأة (٣١,٠% من النساء المصابات). لوحظ حدوث نسبة عالية من الاصابات لدى نساء المجموعة العمرية (٢٥-٢٩) سنة، اما فيما يخص داء المشعرات فقد وجدت عالية منها في المجموعتين العمريتين (٢٥-٢٩) و (٣٠-٣٤) سنة. لوحظ وجود فوارق معنوية بين مجموعتي النساء المصابات بالامراض الجنسية والغير مصابات فيما يخص عمر المرأة عند الزواج، المهنة، وكذلك عدد مرات الاتصال الجنسي خلال الاسبوع، بينما انعدمت هذه الفوارق المعنوية اذا ما قورنت مجموعة النساء المصابات بداء المشعرات مع مجموعة النساء المصابات بالامراض الجنسية الغير طفيلية. لم يشاهد اي تاثير لفترة الزواج، عدد مرات الحمل، عدد الولادات، مستوى التعليم او استعمال موانع الحمل على نسب الاصابات. كذلك نوقش نتائج تأثير باقي العوامل. اخيراً ان انتشار داء المشعرات المهبليّة كان بنسبة عالية بين نساء بغداد.

Introduction:

Sexually transmitted infections (STIs) are infections that are spread primarily through person-to-person sexual contact. There are more than 30 different sexually transmissible bacteria, viruses and parasites. Several, in particular HIV and syphilis, can also be transmitted from mother to child during pregnancy and childbirth [1]. The STIs remain a public health problem of major significance in most part of the world. The incidence of acute STIs is believed to be high in many countries. Failure to diagnose and treat STIs at an early stage may result in serious complications and sequel, including infertility, fetal wastage, ectopic pregnancy, anogenital cancer and premature death, as well as neonatal and infant infections. The individual and national expenditure on STIs care can be substantial. Sexually transmitted infections are a group of communicable diseases, which are now the commonest group of notifiable infectious diseases [2].

Trichomoniasis is the most common curable and non-viral sexually transmitted infection, causing significant morbidity worldwide, with an estimated 174 million new cases per year, more than double the number of *Chlamydia trachomatis* cases and trebles the cases of gonorrhoea [3]. The high *Trichomonas vaginalis* prevalence worldwide is concentrated in developing countries and socio-economically disadvantaged groups, with a dramatic decline in *T. vaginalis* rates in some developed countries in the past few decades [4]. Infection rates between men and women are the same with women showing

symptoms, while infections in men are usually asymptomatic [5]. Trichomonads are highly site-specific protozoan parasites. In women, *Trichomonas vaginalis* infects the lower urogenital tract, causing superficial vaginal and cervical ulceration. Typical symptoms include frothy yellow discharge, itch, odor, dyspareunia and occasionally vaginal bleeding. Infection of the urethra and paraurethral glands causes dysuria and frequency [6].

This study was aimed to determine the prevalence and the incidence of trichomoniasis and other STIs and its related risk factors among women attending family planning unit in AL-Liqa'a Hospital.

Subjects and Methods:

1-Subjects: Two hundred and fifty (250) women were examined during their visit to the family planning unit in AL-Liqa'a Hospital for the period from October 2010 till September 2011. From each woman full history was taken including age, duration of marriage, residence, occupation, previous history of vaginal discharge and any history of STIs.

2-Methods: Two vaginal swabs were taken from each woman (by the clinic physician); the first swab was subjected to a microscopically wet smear examination, while the second was cultured. All vaginal swabs were collected carefully examined and cultured aerobic and facultative an aerobic on appropriate media: Blood agar, MacConkey agar, chocolate agar, Manitol salt agar, Sabouroud Dextrose agar (for fungi). At the end of the incubation period, all

isolates were diagnosed according to well known established microbiological methods, principally based on morphological characters, Gram- staining method and biochemical reactions.

3-Statistical analysis: Data were presented for the qualitative data in terms of observed numbers and percentage, frequencies and significant differences ($P \leq 0.05$, 0.01 or 0.001) between the groups of the study were assessed using Pearson Chi-square test. For quantitative data they were presented in terms of mean, standard error of the mean, range and significant differences ($P \leq 0.05$, 0.01 or 0.001) were assessed by t-test for two independent means. Such analyses were carried out using the computer program SPSS-17 (Statistical Packages for Social Sciences-version 17).

Results:

Of the 250 women included in this study, 58 (23.2%) had STIs. Eighteen women (7.2% of total, 31.0% of infected) had trichomoniasis, while 40 (16.0% of total, 69.0% of infected) women infected with non parasitic infections (includes bacteria and fungi). The age distribution of women was between (18-45) years old. Women subdivided according to age into six age intervals. The higher rate of sexual transmitted disease (32.8%) was found in age between (25-29) years, while the lower rate (3.4%) was found in women less than 20 years old. The highest rate of infection with *Trichomonas vaginalis* (27.8%) was found at two age intervals (25-29) and (30-34) years old (**Table-1**).

There was a significant difference ($p < 0.001$) in the marriage age between the STIs infected women and uninfected women, while there was no significant difference among women that infected with *T. vaginalis* and those infected with non parasitic STIs ,also there were no effect of duration of marriage ,gestation and number of birth on STI patients (**Table-2**). Of 44 cases with positive history of abortion, 19 (32.8%) cases of them were infected. Despite the lacking of significance ($p = 0.064$), the abortion was noticed in high rate in infected groups. Eight (44.4%) women were infected with *T. vaginalis*, while 11 (27.5%) women were infected by non parasitic infections (**Table-2**).

Some socioeconomic and behavioral factors have been studied and illustrated in (**Table-3**) The infection rate in house wives was 27.2% among the total infected women which was higher than the rate of employed women which was 12.9%, while in trichomoniasis infected women 32.7% and 22.2% respectively. Also overall prevalence of infection in women with low education level 55.2% and in 55.5% women infected with *T. vaginalis*, while the infection rate in women with high education level was 13.8% and 16.6% of women infected with trichomoniasis. There was significant difference ($p < 0.05$) related to sexual intercourse between infected and non infected women. Furthermore, *T. vaginalis* was more common in women with sexual intercourses more than 7 times per week and was more common among women using mechanical intrauterine device (IUCD) as contraceptive 62.5% as compare with women using systemic (pills) (**Table-3**).

In the present results, the main symptoms in women infected with *T. vaginalis*, were vaginal discharge, itching (50%, 44.4% respectively), followed by dysuria (33.3%). While in gonococcal infected women vaginal discharge were 72.7% as shown in (**Table-4**)

The highest number of pus cells (full field) was found in 32 (55.2%) from the infected women. These were in 10 women infected *Gonococcus* and mixed infection followed by (8) *T. vaginalis* infected women (**Table-5**).

According to the demonstrating of causative agents by direct smear, *T. vaginalis* were detected in 18 (100%) cases, *Gonococcus* demonstrated from 4 (36.4%) cases, mixed infection in 2 (13.3%) cases and monilia(*Candida*) isolated from 10 (100%) cases. The rest cases were demonstrated by cultivation in different media (**Table-6**).

(Table-1) Distribution of age groups among women infected and uninfected with sexually transmitted infections.

Age groups	Total examined women (250)		Uninfected women 192 (76.8%)		Total of infected women 58 (23.2%)		Parasitic infection (<i>T. vaginalis</i>) 18 (7.2%)		Non parasitic infection 40 (16.0%)	
	No.	%	No.	%	No.	%	No.	%	No.	%
< 20	10	4.0	8	4.2	2	3.4	1	5.6	1	2.5
20-24	55	22.0	43	22.4	12	20.7	4	22.2	8	20.0
25-29	83	33.2	64	33.3	19	32.8	5	27.8	14	35.0
30-34	60	24.0	50	26.0	10	17.2	5	27.8	5	12.5
35-39	22	8.8	14	7.3	8	13.8	1	5.5	7	17.5
≥ 40	20	8.0	13	6.8	7	12.1	2	11.1	5	12.5
Total	250	100	192	76.8	58	23.2	18	31.0	40	69.0
P value	0.385						0.616			

*Significant using Pearson Chi-square test at 0.05 level of significance.

(Table-2) Frequency of different parameters among infected with sexually transmitted infections and uninfected women.

	Total examined women(250)		Uninfected women 192 (76.8%)		Total of infected women 58 (23.2%)		Parasitic infection (<i>T. vaginalis</i>) 18 (31.0%)		Non parasitic infection 40 (69.0%)	
Age of women	29.3±7.9 (18-45)		29.3±8.2 (18-45)		29.5±6.9 (18-45)		29.0±7.0 (18-45)		29.7±6.9 (18-45)	
P value	-		0.866				0.723			
Marriage age	20.5±1.4 (15-24)		21.5±1.3 (15-24)		17.4±1.7 (15-20)		16.9±1.6 (15-20)		17.5±1.8 (16-21)	
P value	-		0.0001*				0.230			
Duration of marriage	13.9±7.3 (2-30)		14.4±7.6 (2-30)		12.4±6.9 (3-30)		12.6±7.2 (3-30)		12.3±5.2 (3-30)	
P value	-		0.074				0.858			
Gestation	6.1±2.7 (1-11)		6.2±2.8 (1-11)		5.9±2.4 (2-11)		5.8±2.5 (3-11)		5.9±2.4 (2-10)	
P value	-		0.461				0.885			
No. of birth (parity)	5.8±2.3 (1-10)		5.9±2.4 (1-10)		5.4±2.1 (2-10)		5.0±1.9 (3-9)		5.5±2.0 (2-10)	
P value	-		0.154				0.375			
No. & % of abortion	44	17.6	25	13.0	19	32.8	8	44.4	11	27.5
Mean ± SD	1.3 ± 0.7		1.1 ± 0.6		1.5 ± 0.8		1.9 ± 1.1		1.4 ± 0.6	
Range	1 - 4		1 - 3		1 - 4		1 - 4		1 - 4	
P value			0.064				0.216			

Data were presented as Mean ± SD (Range)

*Significant using Students-t-test for two independent means at 0.05 level of significance.

(Table-3) Some socioeconomic and behavioral factors among women infected with sexually transmitted infections and uninfected with sexually transmitted infections.

Factors		Total examined women (250)		Uninfected women 192 (76.8%)		Total of infected 58 (23.2%)		Parasite <i>T. vaginalis</i> 18 (7.2%)		Non parasitic infections 40 (16.0)	
		No.	%	No.	%	No.	%	No.	%	No.	%
		250	100	192	76.8	58	23.2	18	31.0	40	69.0
Occupation	House wives	180	72.0	131	68.2	49	27.2	16	32.7	33	82.5
	Employed	70	28.0	61	31.8	9	12.9	2	22.2	7	17.5
P value		-				0.016*		0.534			
Level of education	Low	130	52.0	98	51.0	32	55.2	10	55.5	22	55.0
	Moderate	80	32.0	62	32.3	18	31.0	5	33.4	13	32.5
	High	40	16.0	32	16.7	8	13.8	3	16.6	5	12.5
P value		-				0.820		0.884			
Contra-ceptives used	Users	215	86.0	164	85.4 (76.3)	51	87.9 (23.7)	16	88.9 (7.4)	35	87.5 (16.3)
	Mechanical (IUCD)	131	60.9	100	60.9 (76.3)	31	60.8 (23.7)	10	62.5 (7.6)	21	60.0 (16.0)
	Systemic (Pills)	84	39.1	64	39.1 (76.2)	20	39.2 (23.8)	6	37.5 (7.1)	14	40.0 (16.7)
	Non users	35	14.0	28	14.6 (80.0)	7	12.1 (20.0)	2	11.1 (5.7)	5	12.5 (14.3)
P value		-				0.629		0.881			
No. of sexual contact /week	2	23	9.2	20	10.4	3	5.2	1	5.6	2	5.0
	3	47	18.8	34	17.7	13	22.4	4	22.2	9	22.5
	4	38	15.2	33	17.2	5	8.6	2	11.1	3	7.5
	5	36	14.4	35	18.2	1	1.7	-	-	1	2.5
	6	41	16.4	30	15.6	11	19.0	1	5.6	10	25.0
	7	45	18.0	25	13.0	20	34.5	8	44.4	12	30.0
	9	10	4.0	9	4.7	1	1.7	-	-	1	2.5
	10	10	4.0	6	3.2	4	6.9	2	11.1	2	5.0
P value		-				0.0004*		0.661			

*Significant using Pearson Chi-square test at 0.05 level of significance.

(Table-4) Some clinical symptoms among women infected with different vaginal infectious agents.

Symptoms		Total examined women (250)		Total of infected 58 (23.2%)		Parasitic infection (<i>T. vaginalis</i>) 18(31%)		<i>Gonococcs</i> GC 11(19%)		Other bacteria 4(6.9%)		Mixed infection 15(25.9%)		Monilia 10(17.2%)	
		No	%	No	%	No	%	No	%	No	%	No	%	No	%
Vaginal discharge	Yes	-	-	26	44.8	9	50.0	8	72.7	4	100	-	-	5	50.0
	No	250	100	32	55.2	9	50.0	3	27.3	-	-	15	100	5	50.0
Itching	Yes	-	-	13	22.4	8	44.4	-	-	-	-	-	-	5	50.0
	No	250	100	45	77.6	10	55.6	11	100	4	100	15	100	5	50.0
Dysuria	Yes	-	-	12	20.7	6	33.3	3	27.3	-	-	-	-	3	30.0
	No	250	100	46	79.3	12	66.6	8	72.7	4	100	15	100	7	70.0

(Table-5) Pus cells per field among women infected with different vaginal infectious agents.

Pus cells/field	Infected women 58(100%)		Parasitic infection <i>T. vaginalis</i> 18(31%)		Gonococcal infection GC 11(19%)		Other bacteria (staph&stre p) 4(6.9%)		Mixed infection 15(25.9%)		Monilia (Candida) 10(17.2%)	
	No	%	No	%	No	%	No	%	No	%	No	%
<5	5	8.5	-	-	-	-	-	-	-	-	5	50.0
5-8 / Field	7	12.1	2	11.1	-	-	-	-	2	13.4	3	30.0
10 / Field	7	12.1	4	22.2	-	-	-	-	2	13.4	1	10.0
20 / Field	7	12.1	4	22.2	1	9.1	1	25.0	1	6.7	-	-
Full field	32	55.2	8	44.4	10	90.9	3	75.0	10	66.6	1	10.0

(Table-6) Detection the type of pathogen causing sexually transmitted infections by different laboratory methods among infected women.

Different laboratory methods		Parasitic infection (<i>T.vaginalis</i>) 18(31%)		Gonococcal infection (GC) 11 (19%)		Other bacteria (<i>Staphylococces</i> & <i>Streptococcus</i>) 4 (6.9%)		Mixed infection 15 (25.9%)		Monilia (Candida) 10 (17.2%)	
		No.	%	No.	%	No.	%	No.	%	No.	%
Direct smear (wet mount & Gram stain)	+ ve	18	100	4	36.4	-	-	2	13.3	10	100
	- ve	-	-	7	63.6	4	100	13	86.7	-	-
Culture on Blood &MacConkey agar(under CO ₂)	+ ve	-	-	-	-	4	100	15	100	-	-
	- ve	-	-	-	-	-	-	-	-	-	-
Culture on Chocolate agar + Oxidase test	+ ve	-	-	11	100	-	-	1	6.7	-	-
	- ve	-	-	-	-	-	-	14	93.3	-	-
Culture on sabroide agar	+ ve	-	-	-	-	-	-	1	6.7	10	100
	- ve	-	-	-	-	-	-	14	93.3	-	-

Discussion:

Many local studies indicated comparable incidence of trichomoniasis in our community [7]. This represented an important public health problem, which should be drawn to the attention of the public as well as health authorities. Sexually transmitted diseases are a major global cause of acute illness, infertility, long term disability and death, with severe medical and psychological consequences for millions of men, women and children. The World Health Organization states that: "in developing countries, STIs and their complications are amongst the top five disease categories for which adults seek

health care. In women of childbearing age, STIs (excluding HIV) are second only to maternal factors as causes of disease, death and healthy life lost [3].

The highest incidence of *T. vaginalis* was found in the age group (25–29) and (30–34) years which is in agreement with Al-Samarrae's study in Baghdad, Iraq [8] and Al-Saeed [9] in Dohok province, Iraq, 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. The rates observed in this study are lower than those reported by [10,11,12]. This is probably related to their samples with low

level of sexual activity (most of them unmarried).

Among different parameters included in recent study, marriage age only was reflected significant effect on infection, which it is in agreement with [13]. This suggest that reproductive hormone levels may be partly responsible for high prevalence of trichomoniasis and this hormone decreased in older women and increased in young women. Lack of significances that observed in our study in the frequency of trichomoniasis in relation to duration of marriage, gestation and number of birth were also reported in other studies [14,15]. This may because of large numbers of pregnant women subjected to program of planning unit to eliminate any causes of abortion during gestation period in our country. High rate of abortion was seen in STIs women, although with no significant difference. This observation was also reported by [13]. This finding can be attributed by the same reasons mentioned above.

In the present study in women infected with *T. vaginalis*, the main symptoms were vaginal discharge and itching (50%) for each of them, followed by dysuria (33.3%), Other study reported the same results [16] but with different percent. This may be as a result of different number of patients used in both studies and different areas.

Some socioeconomic and behavioral factor has been studied, We found statistically significant difference in the frequency of trichomoniasis in relation to occupation, house wives was (27.2%) among total of infected women which was higher than the rate of employed women which was (12.9%), which was in complete agreement with [16], other studies reported lack of significance in relation to occupation [14, 15]. The lower rate found in our study among employed women might be due to the women using vaginal washing and antiseptics after coitus with their partners or to the existence of health education programmers about STIs arranged by the maternal care office. All samples in this

study were collected from women attending the family planning unite for obtaining an advice about suitable contraceptive to be used, thus the majority of women (infected and uninfected with STIs) were found to be contraceptive users. Therefore dimension in the effect(s) of the contraceptives may due to this fact. However, trichomoniasis was observed more frequently in women that were IUCD user rather than in women using pills contraceptive. This finding was also reported by [14]. The effects of oral contraceptive (OC) hormones on the vaginal epithelium may create an environment that is less hospitable for trichomonads. OC might also protect against trichomoniasis by lowering vaginal lactoferrin concentrations, which it is the primary source of iron for trichomonads[17],or may be due to the progestin component causing thickening of the cervical mucosa, which then inhibits sperm and pathogens penetration [14]. *Trichomonas vaginalis* was more common in women with sexual intercourses more than 6 times per week. The increase in number of sexual intercourse may be attributed to increase the incidence of STIs.

It is concluded that *T. vaginalis* in women in Baghdad is one of the important STIs with a high prevalence. Sexual intercourses (more than 7 times / week) and using mechanical intrauterine device (IUCD) as contraceptive were found to be risk factors for acquiring trichomoniasis and the eradication of this disease is possible with extensive public health education and administration of specific therapeutic agents to the infected patients.

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