

Isolation and Identification of *Trichomonas vaginalis* parasite in Al-Hilla city / Iraq

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Abstract: The current study was conducted in the period from October 2014 to April 2015 to investigate the epidemiology of trichomoniasis in Hilla city, the total number of examined sample are 636 (urine samples was 445 for different ages of women in addition to 131 vaginal swab samples and 60 urine samples from the husbands of women infected with parasite), collected from hospitals, medical centers, and special clinics. The samples were examined by direct smear method and wet preparation method in hospital and medical centers laboratories and the advanced parasites laboratory in the college of the Science / Babylon University. The result shows the total infection rate in urban for vaginal swab 27.93% and higher in rural 34.44%. The total infection rate for female in rural by urine samples 18.42% and lower in urban 7.77%, As for the women infected husbands the infection rate is very high in rural 96.29% and lower in urban 79.63%.

I. Introduction

Trichomonas vaginalis is a parasitic protozoan that infects the genitourinary tract and produces the most common curable sexually transmitted disease (STD) in sexually active women in all age group (Schwebke *et al.*, 2004) and it is also infected the men and cause urethritis (Schmidt & Roberts, 2000). The percentage of infection is estimated 180 million prevalent cases worldwide (Cates, 1999).

T. vaginalis is one of three types of vaginal infection, also called "trich" (Soodet *et al.*, 2007). Sometimes antibiotics, birth control pills, hormones, and douching can cause vaginal irritation and lead to infection (Schirmet *et al.*, 2007).

It's an extracellular single-cell, flagellated parasite without cyst in the life cycle, so transmission is via the trophozoite stage. Most people infected with trichomoniasis are asymptomatic. Symptomatic infections are characterized by a white discharge from the genital tract and itching (Sumadhya *et al.*, 2012). The infection is associated with several adverse health outcomes, such as lower infant weight (Schwebke & Hook, 2003), symptomatic vaginitis in many women, and facilitation of sexual HIV Transmission (Sutton *et al.*, 1999). As many as 746 new cases of HIV infection among women each year can be attributed to *T. vaginalis* infection in the United States (Fleming & Wasserheit, 1999).

According to (Abdulsadah *et al.*, 2014) in the Kut the percentage of positive cases of *T. vaginalis* 20% by using Wet mount and Whiff test, The highest infection 6.7% appeared in age group (14-43) years old, And Nourian (2012) he found in pregnant women in Iran Thirty-three out of one thousand examined individuals 3.3% presented vaginal infection with *T. vaginalis*.

The incidence rate parasite *T. vaginalis* gradually increase, the highest incidence of *Chlamydia trachomatis* and *Neisseria gonorrhoeae* (Ginocchio *et al.*, 2012), so the aim of the present study was to determine the prevalence of *T. vaginalis* among women that presented to hospitals in Babylon city.

II. Material And Method

A total of 445 samples were collected from female urine, 60 urine samples from the husbands of women infected with parasite and 131 sample from female vaginal swabs from October 2014 to April 2015 from Al-Hilla hospitals and private laboratories in Babylon province. Some information was taken from patients such as name, age, address. To examine the swap samples we put each sample in a 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 trichomonads (Garcia, 2007). To examine the urine samples we used wet mount preparation method, one drop from deposit materials butting on clean sterilized slide and use cover slip to get a clear vision and examine in 40x, 100x. Identification of the parasite by its motile and size and taking a smear from the sample on clean sterilized slide and fixed it by passing the slide on a flame, then use a several drops from a Giemsa stain or methylene blue for 5 min and wash the slide. The staining method helps us to distinguish the flagellum and the undulating membrane of the parasite (Shehabiet *et al.*, 2009; Nasiret *et al.*, 2005).

III. Result And Discussion

The results of the present study showed significant differences between the rates of age group, between the place of residence factor and between overlap age group with place of residence, table(1) and figure (1), show the effect of age and place in the incidence rate of *T. vaginalis* with vaginal swabs samples taken from women. the highest incidence of the *T.vaginalis* in the age group (16-25) years with the percentage of 37.47% followed by the age group (36-45) years with 34.23%, and the lowest incidence of *T.vaginalis* infection in the age group (26-35) years with the 21.23%.The reason may be due to the major effectively enjoyed by females (age of marriage and work) with mixing common in this age group. This result did not agree with Merdawet *al.* (2014) in Iraq who found the highest incidence of the *T.vaginalis* in the age group (25-34) years with the percentage of 49%. As the highest incidence of the *T.vaginalis* in the rural was 34.44% and the lowest incidence of infection in urban was 27.93%, The reason may be due to low health services, cultural level is less than in the urban and not to periodic review by the women to the doctor because of the preoccupation with this category in child rearing, other household tasks and agriculture. And perhaps because of the unlimited dealing with pets, as well as the large number of insects that play an important role to transfer a lot of parasites infection. these results agrees with the Kadhum (2012) in Baghdad, Which found that the incidence of *T.vaginalis* is heights in rural with percentage of 63.07% than in urban with percentage of 36.93%. As well as the highest incidence of the *T.vaginalis* infection in the age group (16-25) years for the rural patients with the percentage of 44.81%, and the lowest incidence for age group (26-35) years for the urban patients was 16.66%. The reason may be due to the early marriage for women in the rural compared with urban, These results didn't agree with Salman & Kareem (2013) in Kirkuk, who found the heights incidence of infection for age group (21-30) in urban was 64.59%. The value of the $P_{value} = (<0.01)$, At a statistical level (0.05).

Table(1): The effect of age and place in the incidence rate of *Trichomonas vaginalis* with vaginal swabs samples taken from women.

Place of residence	Age group	Averages	The effect of place of residence	
urban	16 - 25	30.76	27.93	
	26 - 35	16.66		
	36 - 45	36.36		
rural	16 - 25	44.18	34.44	
	26 - 35	25.80		
	36 - 45	33.33		
The interaction effect between the residence and age group		LSD (0.05) = 4.477	LSD (0.05)=2.585	
The effect of age group		16 - 25	37.47	LSD (0.05) = 3.166
		26 - 35	21.23	
		36 - 45	34.84	

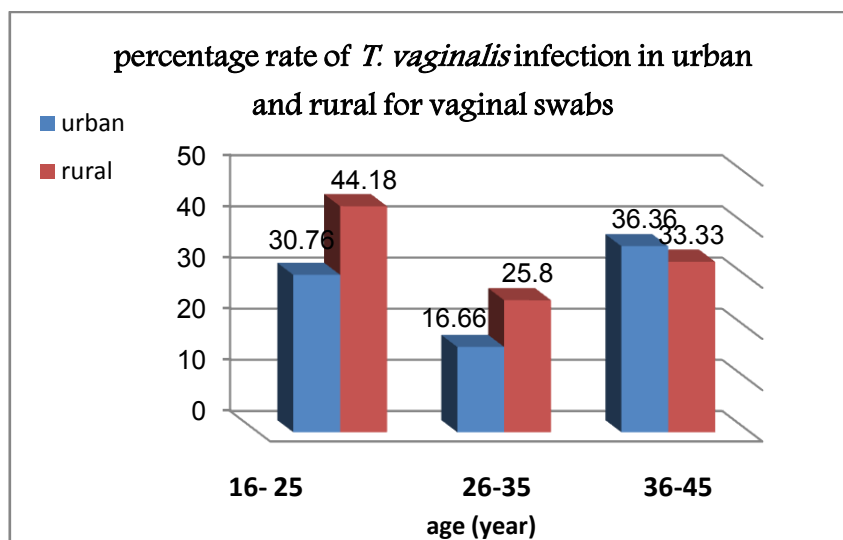


Figure (1): percentage rate of prevalence of *T. vaginalis* in vaginal swab samples in urban and rural ().

The result in Table (2) and figure (2), shows the effect of age and place in the incidence rate of *T.vaginalis* with urine samples taken from women. There are significant differences between the rates of age groups, between the place of residence factor and between overlap age group with place of residence. the highest

incidence of the *T.vaginalis* in the age group(26-35) years with the percentage of 18.51% and the lowest incidence infection in the age group(36-45) was 7.46%, The reason for these result may be due to this is the middle category which is the age of marriage in the rural and the urban, as well as the age of the work and socialize with others. As well as the highest infection rate with *T.vaginalis* recorded in rural with the percentage of 18.42% and the lowest incidence infection in urban was 7.77%, The reason may be due to the same reason in Table (1) As well as the highest infection rate with *T.vaginalis* recorded in the age group (26-35) years for the rural patients with the percentage of 23.16%, and the lowest incidence of the *T.vaginalis* in the age group 26 – 35 years for the urban patients with the percentage of 23.16%, these results agrees with Alquraishi (2014) in Babylon, in the age group and residence factor by found the heights incidence in rural for age group (20-29) was 22.9%. The value of the $P_{value} = (<0.01)$, At a statistical level(0.05).

Table(2):The effect of age and place in the incidence rate of *Trichomonas vaginalis* with urine samples taken from women.

Place of residence	Age group	Averages	The effect of place of residence
urban	16 - 25	6.41	7.77
	26 - 35	13.84	
	36 - 45	3.07	
rural	16 - 25	20.25	18.42
	26 - 35	23.16	
	36 - 45	11.84	
The interaction effect between the residence and age group		LSD (0.05) = 1.626	LSD (0.05)=0.939
The effect of age group		16 - 25	LSD (0.05) =1.149
		26 - 35	
		36 - 45	

We can see from table (1) and table (2)The incidence of *T. vaginalis* using vaginal swabs samples is higher than The incidence of *T. vaginalis* using the urine samples in women.

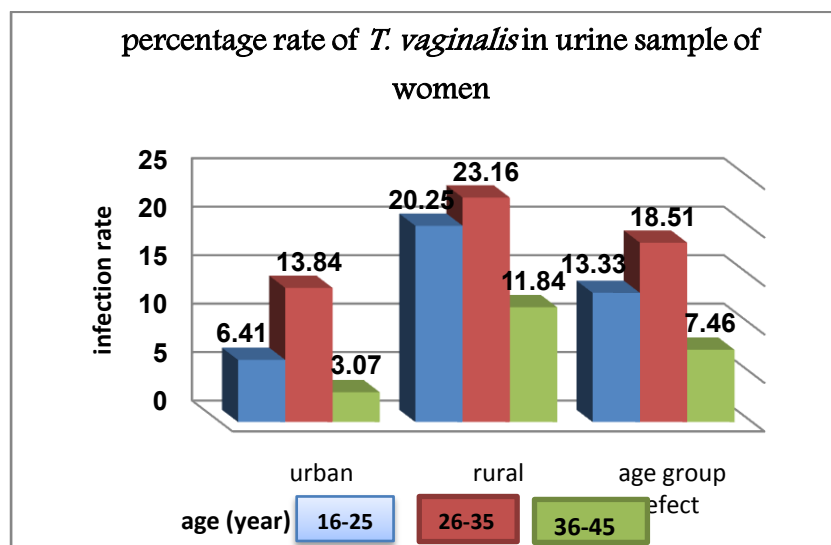


Figure (2): percentage rate of prevalence of *T. vaginalis* in urine samples in urban and rural

Table (3) and figure(3), Shows The effect of age and place in the incidence of *T.vaginalis* by high rate with urine samples taken from infected women husbands.

There are significant differences between the rates of age groups, and between the places of residence factor. The highest incidence of the *T.vaginalis* in the age group (16-25) years with the percentage of 100% and the lowest incidence of *T.vaginalis* infection in the age group(36-45) with the percentage 69.44%, As well as the highest infection rate recorded in rural was 96.29% and the lowest incidence of infection in urban 79.63%, As for The interaction effect between the residence and age group, The highest incidence for age group (16-25) years for the urban and rural. The reason for the very high ratio of incidence of *T.vaginalis* because the infection has got either from wives or vice versa, because these samples from the husbands of infected women exclusively. Figure (4) shows trophozoite stage of *T. vaginalis* in urine samples stained by Methylene blue stain, (40x).

Table(3): The effect of age and place in the incidence of *Trichomonas vaginalis* by high rate with urine samples taken from infected women husbands.

Place of residence	Age group	Averages	The effect of place of residence
urban	16 - 25	100.00	79.63
	26 - 35	88.88	
	36 - 45	50.50	
rural	16 - 25	100.00	96.29
	26 - 35	100.00	
	36 - 45	88.88	
The interaction effect between the residence and age group	LSD (0.05) =6.120		LSD (0.05)=3.533
The effect of age group	16 - 25	100.00	LSD (0.05) = 4.327
	26 - 35	94.44	
	36 - 45	69.44	

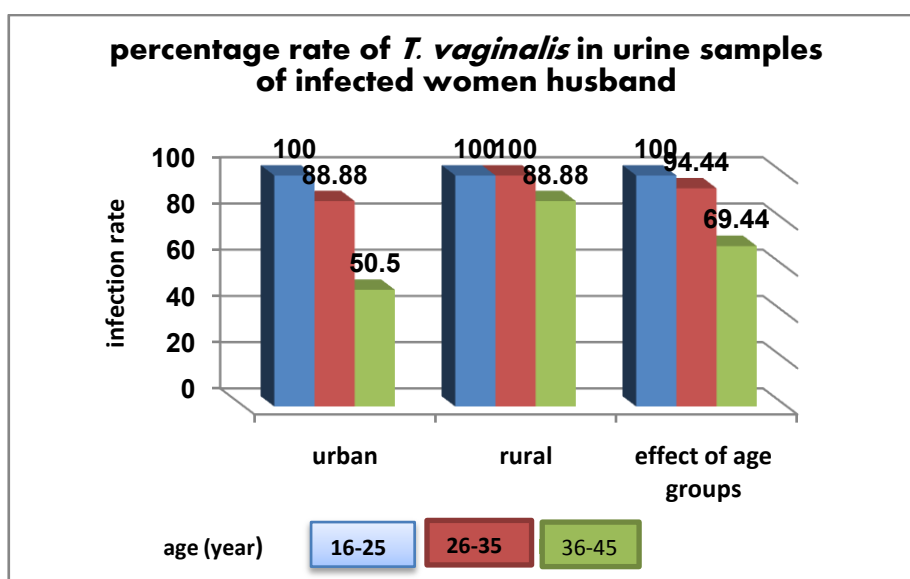


Figure (3) : percentage rate of *T. vaginalis* Infection in urine samples of infected women husbands.

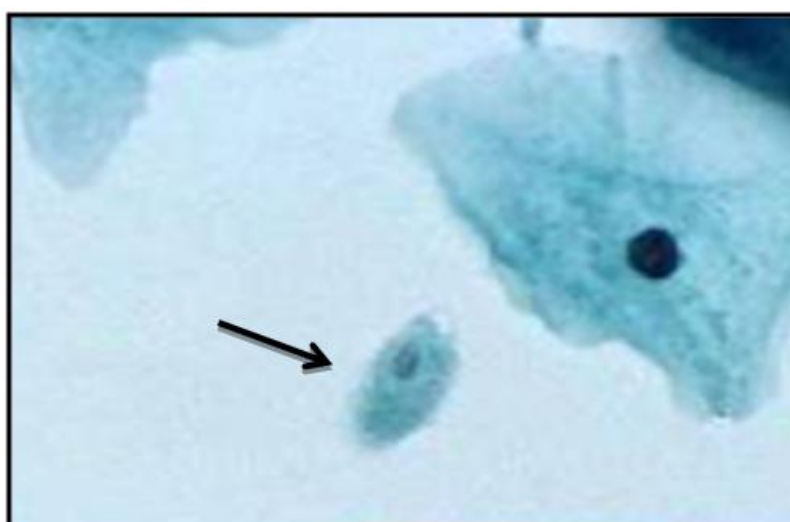


Figure (4): trophozoite stage of *T. vaginalis* in urine samples stained by Methylene blue stain, (40x).

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