

## Terichomoniasis as a complication of Sexual Transmitted Diseases in women referred to Gynecology Clinic in Southeast of Iran

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**ABSTRACT:** Trichomonas vaginalis is a protozoan pathogen of the human urogenital tract. This study was designed to provide a data base on investigation of the overall prevalence and clinical findings and compare of diagnosis methods for detection of Trichomoniasis. In this descriptive - cross sectional study a total of 400 vaginal samples were examined with wet smear and Pap smear and diamond culture medium for Trichomoniasis in Chabahar in 2014. The confirmed clinical findings by gynecologist recorded in patient information forms. The data analysis was done using the SPSS software version 18.0 and frequency tables generated. The chi-square and T student tests was used to determine significant relationship between categorical variables at a significant P value of less than or equal to 0.05. In this study number of 39 Trichomoniasis (9.75%) with diamond culture media and 27 cases (6.75%) with Pap smear and 25 cases (6.25%) with wet mounts direct microscopy slides, were reported positive respectively. However, there was no statistically significant difference between the clinical symptoms seen in studied patients with infection ( $P>0.05$ ), but there was a statistically significant difference between patient reported sings with infection ( $P<0.05$ ). Considering high prevalence of Trichomonas vaginalis and a substantial proportion of infections are asymptomatic and excessive treatment before the exact laboratory diagnosis makes necessary reliable testing methods .It is recommended in addition to wet smear, culture methods should be performed routinely in medical laboratory.

**KEYWORDS:** Trichomoniasis, prevalence, clinical findings, diagnosis methods.

### INTRODUCTION

Trichomonas vaginalis is a motile protozoan with four flagella and an anterior nucleus is seen only as a trophozoite. Humans are the only known host of this protozoan. In developed countries, more than 50% from patients referred to sexually transmitted disease clinics, are affected with Trichomoniasis [1]. Trichomonas vaginalis infection is the most common non-viral sexually transmitted disease [2].

This parasite grows better in humid environment, pH between 4.9 to 7.5 and temperature 35 to 37 ° C, if this condition is more or less than the optimal level the organism disappears. In women usually affects the vagina and urethra but it may infect the bartholin glands of the cervix, or bladder scan. This organism is often at the end of the urethra in men, but affects the prostate gland, seminal vesicle and epididymis rarely [3]. The contamination rate of Clamidomonas in patients is more than gonorrhea, syphilis and chlamydia infection and also has an effective role in transmission of HIV [4]. The prevalence of this parasite in different parts of Iran is reported different [5]. About 10 million health centers verify the vaginal complaints annually. Vaginal symptoms are associated to bacterial Vaginitis, Vulvovaginitis candidiasis and Trichomoniasis diseases.

Moreover *Neisseria gonorrhoeae* and *Chlamydia trachomatis* are the other factors of Vaginitis [6]. The most common complaint associated with vaginal trichomoniasis (vaginalis) is vaginal discharge.

The discharge is often abundant and accompanied by burning, itching or skin abrasion. When using a speculum look into the vagina often the mucus is hyperemic and also is seen red spot lesions. The most common symptoms that associated with infection are urinary frequency and dysuria. There are large numbers of patients with urethral involvement. In the small percentage of patients may develop cystitis. There is a relationship between this infection and cervical carcinoma [7].

In Rezayian and colleagues study which was conducted in Tehran in 2009, the prevalence of Trichomoniasis with cultivation method has been reported 2.3% [8]. The prevalence of *Trichomonas vaginalis* has been reported 31% in Mozambique and 4.6% in Greece [9, 10].

In Habib pour's study were examined 1050 women referred to 6 clinics in Sari. The rate of infection is estimated 2.7% [11].

In individuals referred to Sexually transmitted disease clinics in the United States 25% infection and between African Americans in Los Angeles 38% infection has been seen. In the African countries such as Zimbabwe and Nigeria the infection rate has reached to 16 and 17 percent, respectively and also among women with HIV, infection rate has reached to 38% in Zaire and in Tanzania, has been reported 74.5%, which may be related to the influence of such factors as race and culture of that areas [12].

Several diagnostic methods has been developed and applied for the detection of *Trichomonas vaginalis*, that each has its own characteristics in terms of Diagnostic sensitivity, therefore the prevalence of Trichomoniasis in different studies, have been reported with varying results [13].

In Iran diagnosis of *Trichomonas vaginalis* among gynecological ward are done solely on clinical symptoms and pathology reports and given the non-specific clinical signs, these symptoms do not help in the diagnosis of this disease and provides the need for a test to detect this disease. The aim of this study was that in addition to investigate the prevalence and clinical findings, diagnostic methods are also compared. The results of this study will contribute to diagnosis, treatment and prevent complications of disease.

## **MATERIALS AND METHODS**

The study was conducted on 400 patients that (of Sarbaz, Nikshahr, Chabahar and Konarak cities) referred to women's clinics of Chabahar. The purpose of this study was to determine disease outbreaks, found the relationship between the disease and demographic factors, the comparison of laboratory diagnostic methods and also provide the most accurate and sensitive method for laboratory diagnosis. Patients who had satisfaction to participate in the research and were considered as eligible, after completing the information form, sampling was done by a gynecologist. Selection conditions, including they were not in menstruation period and did not use vaginal douches and vaginal creams in past 24 hours. Our sampling method was available sampling. The sampling method was that: At the beginning the vaginal entrance, opens with sterile speculum, as necessary the speculum is wet with water and use of any slippery material is prohibited because it will reduce the activity of the parasite and also agglutinate them. Pap smear was obtained from ectothrix and endothrix, and was fixed immediately with pathofix. Then samples were taken by sterile swab from the vaginal discharge of cervical mucus, especially the posterior phonics and exocervix. A swab sample was transferred to diamond medium, next swabs were taken for preparation wet smear and the results were recorded in related forms. In addition in order to pH identification paper acidimeter and forceps was used for sampling. Wet slide after preparation immediately was examined by microscopic study at the clinic. Pap smears also stained in the laboratory and examined by a pathologist and executor. Slides were prepared from the diamond culture and at intervals of 24-48 and 72 h after transfection vaginal swab taken from the subjects and were examined by accurate microscopic. All samples were labeled with patient information results were analyzed by SPSS software using chi-square and t-student tests.

## **RESULTS AND DISCUSSION**

In the present study, 400 samples of vaginal were examined by diamond cultivation, pap smears and wet smear methods in terms of *Trichomonas vaginalis*. Number of 39 cases (9.75%) by culture method, 27 cases (6.75%) by Pop smear method and 25 cases (6.25%) were positive by Wet slide method. Table number 1 shows the absolute and relative frequency of different experimental techniques.

**Table 1- Absolute and relative frequency of different experimental methods**

Diagnostic method	Diamond cultivation		Pap smear		Wet slide	
	number	%	number	%	number	%
Trichomoniasis						
Positive cases	39	9.75	27	6.75	25	6.25
Negative cases	361	92.25	373	93.25	375	93.75
Total	400	100	400	100	400	100

If we considered diamond cultivation as a standard index and also assume its sensitivity as (100%), the results obtained from this study, shows the sensitivity of Pap smears method (69.2%) compared to diamond culture method and sensitivity of wet smear (64.1%) compared to diamond culture method.

According to the findings of demographic factors, most of the positive cases, 19 cases (48.7%) were in the age group 21-30 years. Table 2 shows the frequency of distribution of Trichomonas Vaginalis in terms of age groups participating in the study. Studied individuals in terms of educational level, 187 cases (46.8%) were illiterate, 121 cases (30.21%) had primary education, 52 cases (13%) were in middle school, 32 cases (8%) were diploma and 8 persons had college education which most positive cases were in illiterate study group, they were 19 cases that formed 48.7% of positive cases, there were no positive cases in 8 patients with college education.

**Table 2: Frequency distribution of patients and healthy subjects according to age group**

Age group	Frequency in patients		Frequency in healthy persons		Total	
	Number	%	number	%	number	%
11-20	12	30.8	120	33.2	132	33
21-30	19	48.7	145	40.2	164	41
31-40	8	20.5	72	19.9	80	20
41-50	0	0	24	6.6	24	6
Total	39	100	361	100	400	100

Chi-square test was shown no significant correlation between age and incidence of Trichomoniasis, but was observed no significant correlation between the degree of education and infection ( $P=0.027$ ). There was also a significant association between occupation type and infections ( $P<0.001$ ). 377 of the studied patients (94.3%) were housewives, 32 cases of them (8.5%) were positive in terms of Trichomoniasis that formed 82.1% of affected persons. 23 case of studied subjects (5.8%) were employed, that 7 cases of them (30.4) were affected that they formed (9.8%) of all patients. Of people with Trichomonas vaginalis, 11 cases (28.2%) were suffering from itching, 14 cases (35.9%) from lower abdominal pain, 10 cases (25.6%) from burning during intercourse and 10 cases (6/25%) of. Chi-square test showed no significant relationship between itching, burning during intercourse, lower abdominal pain and dysuria with infection. Table 3 shows the frequency distribution of the symptoms noted by people.

Most patients were in group that had history of 4 vaginal delivery and 59% (23 patients) of affected individuals. Using the t student test was obtained a significant relationship between the number of delivery and Trichomonas vaginalis infection ( $P=0.011$ ). This test is also was obtained a significant association between age at marriage with Trichomonas vaginalis infection ( $P<0.001$ ). T-student test showed a significant association between Trichomonas vaginalis infection and weekly intercourse ( $p<0.05$ ). 285 cases (71.3%) of the studied individuals were not using any contraceptive method and 215 cases use of contraceptive methods, respectively, 83 cases (20.8%) used contraceptive pill, 24 cases (6%) used injections, 8 cases (2%) had tubal ligation and the percentage of interrupted methods and other methods were zero. Using chi-square test was obtained no significant association between contraceptive methods with Trichomonas vaginalis infection ( $P>0.05$ ).

**Table 3: Distribution of frequency in patients with symptoms listed**

Symptoms	Frequency	Frequency in patients		Statistical results
		number	%	
Itching during intercourse		11	28.2	P=0.082 $\chi^2=3.03$
Burning during intercourse		10	25.6	P=0.062 $\chi^2=3.47$
Dysuria		10	25.6	P=0.197 $\chi^2=1.66$
Lower abdominal pain		14	35.9	P=0.194 $\chi^2=1.69$

P= = value,  
 $\chi^2$ = Chi-square test

Distribution of frequency and statistical results of clinical finding were shown in table 4.

**Table 4: Distribution of clinical findings based on risk**

Clinical finding	Frequency	Frequency of clinical finding in patients		
		number	%	
Vaginal appearance	Normal	23	59	P= 0.406 $\chi^2=.690$
	Inflammation	16	41	
Cervical appearance	Normal	27	69.2	P=0.222 $\chi^2=3.007$
	Inflammation	4	10.3	
	lesion	8	20.5	
Amount of discharge	normal	11	28.2	P=0.001 $\chi^2=11.57$
	Uncanny	28	71.8	
Consistency of discharge	Uniform	27	69.2	P=0.630 $\chi^2=.232$
	Non-uniform	12	71.8	
Color of discharge	White	12	30.8	P<0.001 $\chi^2=29.96$
	Gray	12	30.8	
	Yellow-green	15	38.5	
Discharge appearance	lucid	20	51.3	P=0.065 $\chi^2=5.54$
	Opaque	11	28.2	
	Bubbles	8	9.8	

P= = value,  
 $\chi^2$ = Chi-square test

According to clinical finding that are shown in table 4 and the chi-square test analysis there is no significant correlation between the appearance of the cervix and Trichomonas vaginalis infection but this test, showed a significant relationship between the amount of vaginal discharge and Trichomoniasis infection (P=0.001), also there is no meaningful correlation between consistency of discharge and Trichomonas vaginalis infection. In this current study chi-square test was showed a significant relationship between color of discharge and Trichomonas vaginalis infection (P<0.001) but showed no meaningful correlation between appearance of discharge and Trichomonas vaginalis infection. Finally there is a significant relationship between vaginal pH and Trichomonas vaginalis infection (P<0.001).

In this study, 400 samples of vaginal that were examined the number of 39 cases (9.75%) were positive by culture method, 27 cases (6.75%) by Pop smear method and 25 cases (6.25%) by Wet slide method. In the Study of Etminan and

colleagues in 2006-2007 in Yazd, 384 persons which were examined by the wet method (2.1%) and culture method (2.6%) were reported positive [14]. In the study of Namazi and colleagues in 2004-2005 in Tabriz the prevalence of Trichomoniasis were reported 9.2% [15]. In the study of Dr. Gharavi and colleagues in 2005 in Tehran positive cases have been reported by dorse culture method (5.2%), wet smear method (2.6%), with a pap smear (3.4%), and various Staining Methods (3.8%) [16]. The study were conducted by Zangiabadi and colleagues in Zahedan the prevalence of Trichomoniasis infection were reported (%5.7) and diamond's medium was considered as the gold medium and standard index [17]. In another study in south-western of Nigeria and Osgobo has been done under the title of review of Trichomoniasis by Hassan Abdul and colleagues in 2005 the prevalence of infection in wet smear have been reported 10.3%, and in cultivation methods was 12.6% [18]. Given that the prevalence of these infections affect by health, social and cultural factors disease outbreaks are reported differently in different regions of course the race, sample size, the study population and researchers accuracy should be considered. In the study was conducted by Gharavi and colleagues in Tehran, sensitivity of the wet method than the cultivation method has been reported 50% and the sensitivity of Pop smear method than dorse cultivation was 66% and also the sensitivity of staining method than dorse culture was 74% [16]. In the study of Zangiabadi in Zahedan the sensitivity of wet smear than diamond culture was reported 75% and the sensitivity of dorse cultivation than diamond culture was reported 83.3% [17]. In current study the sensitivity of Pop smear than diamond culture and the sensitivity of wet slide than diamond cultivation method was reported 69.2% and 64.1% respectively. In various study the results of sensitivity investigation of testing methods are reported different that seems due to differences in sampling methods, preparation of medium culture and parasite morphology in Pap smear and wet smear. In study of Hassan Abdul and colleagues in Osgobo and south-western Nigeria, most cases were in 21-30 age groups [18] which have consistency with our current study. In the Sharifi study in Sirjan, was observed no significant differences between dyspareunia, vaginitis, cervicitis and frequent urination with *Trichomonas vaginalis* infection [19]. At reviews of Namazi and colleagues in Tabriz was obtained no significant correlation between burning during intercourse, itching and lower abdominal pain with the Trichomoniasis infection but a significant association have been reported between *Trichomonas vaginalis* infection and dysuria ( $P < 0.05$ ) [15].

In this study, among the symptoms which were reported by patients burning during intercourse, itching, dysuria, lower abdominal pain were investigated using chi-square test had no significant relationship with Trichomoniasis infection ( $P > 0.05$ ) and have compatibility with above studies. Dysuria variable have difference in Namazi study and this study. Also of the clinical finding, cervix appearance, vaginal state, consistency of discharge and discharge appearance was not obtained significant relationship ( $P > 0.05$ ) which have consistency with Sharifi [19] and Namazi [15] study. About the discharge appearance there is a difference between Namazi study and this study. About the amounts of discharge and color of discharge and also vaginal pH there was a significant relationship with *Trichomoniasis vaginalis* and have consistency with Namazi study [15].

In this study, no significant correlation between age and *Trichomonas vaginalis* infection were obtained ( $P < 0.001$ ) that is compatible with Naseri far [20] and Namazi [15] study. In Etminan review, the lowest percentage of infection was in housewives women (1.9%) and the highest one was observed in employee women (9.7%) [14], and also in our study the highest rate of infection was seen among employee women. In this study no statistically significant association was observed between contraceptive methods and risk of Trichomoniasis that are in consistency with studies of Rashidi [21], Etminan [14] and Dr. Baghche Sarai [22]. In the present study, a significant association was obtained between frequency of vaginal delivery and with *Trichomonas vaginalis* infection that are in consistency with Etminan [14] and Namazi [15].

## CONCLUSION

The results of this study showed that demographic and cultural factors have a significant role in Trichomoniasis infection and given the high incidence of infection and asymptomatic carriers (lack of significant relationship between clinical findings and risk of Trichomoniasis) and irregular treatment before definitive laboratory diagnosis, it is suggested that culture method routinely used in medical diagnostic laboratories.

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