

## The Prevalence of *Trichomonas vaginalis* in Pap Smear Samples of Women Presented to Imam Reza Hospital, Kermanshah, Iran from 2006-2012

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**Abstract:** Trichomoniasis is a lower urogenital tract parasitic infection which usually occurs during child bearing ages and almost always is transmitted via sexual contact. The objective of the current study was to determine the rate of infection by this parasite among women who presented to Imam Reza Hospital, Kermanshah, Iran between 2006 and 2012. In this cross-sectional descriptive study, all medical records and Pap smear reports of women who aged 15-49 years who presented to Imam Reza Hospital of Kermanshah, Iran for Pap smear test or routine gynecologic examinations were studied. A total number of 1,100 records were selected by consensus method between 2006 and 2012 to determine the rate of infection by *Trichomonas vaginalis*. There were 7 patients with trichomoniasis infection in 1,100 studied records (0.63%). The distribution of presentation to hospital during this 7-year period was homogenous and about 72.42% of the affected patients presented in summer and fall. The highest rate of infection was seen in age range of 30-39 years (42.9%). None of the infected patients had academic education at university level and the most common symptoms were burning feeling, discharge and pruritus. Since, Pap smear test is not an accurate method of diagnosing trichomoniasis and here we made use of Pap smear results for determining the rate of this infection, it is expected that the actual rate of trichomoniasis might be higher in general female population of Kermanshah than this number. However, considering that most patients with trichomoniasis are asymptomatic and Pap smear is a routine screening method used among women for detecting cervical cancer, this method can be used in determining the prevalence of trichomoniasis.

**Key words:** *Trichomonas vaginalis*, Pap smear, prevalence, Kermanshah, sexual contact

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### INTRODUCTION

Trichomoniasis is the most universal protozoa transmitted disease of genital urinary system (Bachmann *et al.*, 2011). This disease after bacterial infections is the most prevalent non-viral sexually transmitted disease and the most prevalent sexually transmitted disease in the world that the men can be the carrier of disease and the women can be the reservoirs of infection (Der and Pol, 2007). Each year, >200 million people around the world are infected by this parasite (Bachmann *et al.*, 2011; Johnston and Mabey, 2008) also studies show that in different parts of Iran the overall prevalence rate varies between 1 and 42% (Hezarjaribi *et al.*, 2015; Nazari *et al.*, 2015).

Level of contamination in Profligate communities and groups that have poor sanitation facilities is higher (Johnston and Mabey, 2008). This protozoa is not able to reproduce in the normal vaginal PH (5.4-8.3) but by

increasing the PH of the vagina during menstruation and pregnancy, the risk of fungal infections growth, makes it possible (Miller *et al.*, 2008). This protozoa exists just in trophozoite form and decreased by longitudinal binary division (Der *et al.*, 2008). Range of disease is variable from a minor infection to a chronic inflammatory of the female genital urinary system.

So that in women, the disease has a wide spectrum of clinical manifestations, from asymptomatic infection to severe vaginitis with vaginal purulent secretions and cervicitis, scars and possibly cervical cancer (Hoffman *et al.*, 2003). In men infection is usually asymptomatic but may have cause prostatitis and Urethritis (Sena *et al.*, 2007). As was mentioned the transmission of this protozoa usually occurs through sexual contact but the use of dirty pools, toilet and dirty underwear and unsanitary pelvic examination in women can also make the infection (Der and Pol, 2007).

Trichomoniasis can cause mild to severe secretions, frequent urination, spotting after intercourse, painful menstruation and cervical Strawberry (Hezarjaribi *et al.*, 2015). Studies have shown that women of reproductive age (49-16) have the highest incidence (Sutton *et al.*, 2007). *Trichomonas vaginalis* infection usually is recognizable by physician in office by using a simple technique called wet mount that looks for irregular and progressive typical movements of organisms (Krieger *et al.*, 1988).

Wavy movements of raging Membrane can be observed for several hours after the immobilization of protozoa (Sharbatdaran *et al.*, 2005; Mohmmadi *et al.*, 2014). Studies have reported the sensitivity of this method as nearly 60% (Krieger *et al.*, 1988).

About the culture media, in addition to Berg-Kupfer culture media, other culture media were evaluated (Makvandi and Shoushtari, 2012). The most sensitive of these environments, is modified Diamond's culture media (Krieger *et al.*, 1988). Papanicolaou smears (Pap Smear) shows *Trichomonas* and also the changes of epithelial cells are easily visible in vaginal smears but in this method in 40-30% of cases the results are obtained false (Makvandi and Shoushtari, 2012).

Kermanshah, including the host cities and large population residing in settlements and outskirts of the city and this issue can make them susceptible to various infectious diseases such as Trichomoniasis (Nazari *et al.*, 2015) for this purpose, this study is designed and investigated according to 10-50% of patients that are asymptomatic with the overall goal to determine the rate of parasite infection in women who referred to Imam Reza hospital that has considerable admission in terms of outpatient to clinic so that after determining the extent of contamination and appearing the importance of the disease to authorities and health practitioners, necessary actions be done.

## MATERIALS AND METHODS

Present study was done in form of retrospective and cross-sectional in Imam Reza Hospital of Kermanshah from 2006-2012.

The population under study consisted of all women in reproductive age (15-49 year) that voluntarily had come to Imam Reza hospital of Kermanshah for checking by Pap smear or control and femininity examinations. Sample size according to a study by Dr. Somayeh Makvandi and his colleagues were obtained 236 cases with confidence of 95% and accuracy of 1.5% and prevalence rate of 1.4% (Makvandi and Shoushtari, 2012). Criteria for this test were lack of vaginal bleeding and being menopause

during sampling. These samples were studied again at the Parasitology laboratory with the aim of identifying Trichomoniasis and the slides that contain *Trichomonas* were identified and prevalence of this infection was determined. The results of this study and demographic data (that was achieved with the help of file patients) include: age, educational degree, season of admission and complaints and symptoms were collected in special check list that already prepared for this purpose and validity of that were assessed and arranged by the experts. This information is in order to prevalence of trichomoniasis and the prevalence relative to underlying variables and some symptoms, such as itching, irritation, however, foamy secretions, the patients were taken during the examination. This information were taken from the patients during the examination in order to determine the prevalence of trichomoniasis and the prevalence relative to underlying variables and some symptoms, such as itching, irritation of vulva, foamy secretions. . Finally, for categorize and summarize the findings, SPSS software version 16 was used.

## RESULTS AND DISCUSSION

In the present study, 1100 samples were examined that from them, 7 cases was diagnosed *Trichomonas vaginalis* (with abundance of 0.63%). The average age of those infected with *Trichomonas vaginalis* were 37/14 with standard deviation of 43/31. About 1/34% of those who were investigated were in the age group of 39-30 years and this age group with 9/42% of patient had the highest prevalence of *Trichomonas vaginalis*. About 42/86% of patients had elementary education and cases with university education by 2.63% in 1100 examined cases had less abundance and prevalence in this group was zero.

The 3 cases of 7 infected cases with *Trichomonas vaginalis* had come in summer and 2 cases had come in autumn and these toe seasons with abundance of 71/43% had a higher visit than spring and winter.

Also recorded symptoms in patient's file show that irritation, itching and foamy and funky secretions were major symptoms in these patients. In Table 1 the details of demographic characteristics and clinical symptoms of this disease has been shown.

In Iran, the prevalence of trichomoniasis has been reported differently in different population groups and in different cities (Nazari *et al.*, 2015; Rasti *et al.*, 2003). This parasite infection is higher in women aged 20-35 years (Nazari *et al.*, 2014a). In the study of Rezaeian *et al.* (2009)

Table 1: The details of demographic characteristics and clinical symptoms of this disease

Patient	Age	Education	Year of visit	Season of visit	Signs and symptoms
1	18	Diploma	2012	Summer	Irritation, itching, foamy secretions
2	26	secondary school	2006	Spring	Irritation, itching
3	28	primary school	2010	winter	secretions with a bad odor
4	31	secondary school	2007	Autumn	Irritation, secretion
5	34	primary school	2009	Summer	Irritation, itching
6	37	secondary school	2007	Autumn	Without any signs
7	46	Illiterate	2011	Summer	Irritation, foamy secretions

that was done about the women who visited to a clinic in tehran in 2008, the prevalence of trichomoniasis was reported 3.2% and in the other studied by Mostaghel and Mozaffarian (1999) that was done on Tehran's condemned woman of Evin prison in 1996 there was a high prevalence of about 26%. In a study that was done by doctor Fallah and his colleagues in 1999 in Tabriz and Basmeng for determining the prevalence of Trichomoniasis by wet mount method in women who went to health centers, Overall 22.6% of patients were infected (Shahbazi *et al.*, 2001). In a study that was done by Makvandi and Shoushteri (2012) with the aim of epidemiological study of cervicovaginal infection in 1353 Pap smear samples in Ahvaz in 2011. The rate of trichomoniasis infection was determined 1.4%. In a study that was done by doctor Noorian *et al.* (2013) to evaluate low birth weight infants in 1000 pregnant women in Zanjan in 2011, the rate of contamination was 3.3%. In study that was done by lame Akhlaghi in 2004 on 500 women's vaginal secretions who went to robotkarim' shealt center with an aim of evaluating the rate of trichomoniasis infection and Candida albicans the prevalence of *Trichomonas vaginalis* in study population was 7 cases (1.4%). Nazari *et al.* (2015) in a descriptive-analytic study evaluate the prevalence of Trichomoniasis in women of 65-15 years old in the maternity ward of Imam Reza Hospital in Kermanshah in 2011-2012. In this study, the Dorset culture medium and wet culture were used. In this study, 600 women were monitored for the risk of Trichomoniasis and the results showed that 6 patients in direct view have a positive result (1.5%) and in the Dorset culture medium 13 patients (2.1%) were positive (Nazari *et al.*, 2015). In this study the prevalence of vaginalis in the women who went to Imam Reza hospital in the 2006-2012 year and were examined with the help of pap smear test which 7 cases of 1,100 samples, were diagnosed with *Trichomonas vaginalis* (0.63%). The prevalence of getting Trichomonas in the women who went to Imam Reza hospital in the years of 2006-2012 was lower than other studies inside the country and only is close to the prevalence of trichomoniasis in the study conducted in Tehran (0.73%) (Nourian *et al.*, 2013). The reasons of these differences could be the difference in the time frame of these studies, different levels of health care and cultural issues and the

Imam Reza hospital isn't professional for vaginal disease and the Pap smear diagnostic accuracy was 60% (Makvandi and Shoushtari, 2012; Hezarjaribi *et al.*, 2015). Also another studies about trichomoniasis have been done in other parts of the world (Taghavi *et al.*, 2014). The prevalence of trichomoniasis have been reported 8% in Mongolia, Mozambique (31%), Greece 6/4% (Piperaki *et al.*, 2010). Other studies have been reported the prevalence of trichomoniasis in America and Africa between 25-10% (Miller *et al.*, 2008; Sutton *et al.*, 2007) which is much higher than reported in Iran and infection study (Nazari *et al.*, 2015; Nourian *et al.*, 2013). Considering that Trichomonas is a sexually transmitted disease because of the Islamic culture in iran the prevalence of trichomoniasis in lower than other countries (Rasti *et al.*, 2003). Nazari *et al.* (2014b) find that Blood sugar levels in women have no significant effect on the prevalence of Trichomonas. In general we can consider that the differences in the prevalence of trichomoniasis in outside and inside are:

- A large number of abroad studies carried out in special STD clinics and on patients with clinical symptoms that would be more chance of positive cases among them and increases the estimated prevalence in these communities (Bowden and Garnett, 2000)
- Non-sexual transmission of parasites has a direct relationship with the culture and lifestyle of individuals; using the foreign toilet is one of the factors that are more common in non-Islamic countries (Matini *et al.*, 2012)
- Using the sponges, bath and infected swimming pools will help to promote this disease in women that life style in different countries has significant differences in this case (Shahbazi *et al.*, 2001; Bowden and Garnett, 2000).
- Parasite resistance to medicines that have been introduced in some studies (Schwebke and Burgess, 2004)
- Appearance of clinical signs in one third of asymptomatic patients that with return clinical symptoms after 6 months that helps to increase the disease prevalence

- The sampling and diagnostic methods that have a significant impact on the results (Rasti *et al.*, 2003). In this study, the average age of patients with *Trichomonas vaginalis* 31/43 years with standard deviation of 17/34

About 1/34% of those surveyed were in the age group of 30-39 years and this age group with 9/42% of *Trichomonas vaginalis* patients had the most frequent patients.

In the study of Nazari *et al.* (2015) that was done for investigating the prevalence of *Trichomonas vaginalis* in maternity ward of Imam Reza Hospital in Kermanshah in 2011-2012, the highest incidence of patients was in the age group with 21-35 years. In the study that was done by Fallah in Tabriz and Basmenj in 1999, the age group with 31-40 years had the highest incidence of patients (Shahbazi *et al.*, 2001). In the study that was done by Etminan and Bokaei (2007) the most prevalence was in the age group with 25-35 years. In the Ghaffari's study: 54/43% of Clients were in the age group with 25-34 years, about 87% housekeeper and 48% were illiterate or had elementary education. In Rasti *et al.* (2003)'s study, the prevalence of *Trichomonas vaginalis* was 2.1 and 54% of patient was in age group with 20-34 years and illiterate and housekeeper women has the most amount. That the results these studies match with present study. In the present study 42/86% of people had secondary school education and no one had university graduates and results were match with Shahbazi *et al.* (2001), Akhlaghi, Sharbatdaran *et al.* (2005), Rabbani *et al.*, (2003) and Etminan and Bokaei (2007)'s studies.

In the study of doctor Nazari *et al.* (2015) done in Imam Reza hospital, the results showed that 78% of cases were housekeeper and most of them (36.3%) had high school education.

In the present study 43/71% of infected people with *Trichomonas vaginalis* were referred to Imam Reza Hospital in summer and autumn and recorded symptoms in the patients' medical records showed that 71/42% of patient has complained from irritation, 57/14% of itching and 42/86% also has complained from foamy and funky secretion and one patient had no symptom and complaint. In the study that was done by Nazari *et al.* (2015) in Imam Reza Hospital, results showed that 78% of people were urban and 75/5% of patients had complained from itching, 50% from increased secretion and 29/6% had complained from funky secretion.

In a study in Rasht by Keyhan (newspaper), symptoms like: vagina secretions, irritation and factors like: age group, level of education, job, Methods of contraception and the relationship of this items have been

studied and with 95% confidence, stated that there is a relationship between infection and irritation, increased vagina secretion, itching and purulent secretions (Hezarjaribi *et al.*, 2015). Some sources don't consider age as a independent risk factor for spreading of infection because they believe that some cases of infection in infants and pre-puberty and menopause has been found (Bachmann *et al.*, 2011; Hindi and Lubbad, 2007) so probably we can consider cultural differences like patient's marriage age and pregnancy age, effective.

Some sources have pointed to itching and irritation in tow-third of patients (Piperaki *et al.*, 2010). The patient statements about the irritation and itching, is not decisive reason due to their infection with the parasite because itching and irritation can be caused by topical reason or other infections (Miller *et al.*, 2008).

But special frothy secretions is one of the most important clinical symptoms of trichomoniasis that has a yellow color with green reflections with very bad odor that in these cases we need to sampling because patient's judgments and statements may be not accurate.

## CONCLUSION

According to the research findings and relatively low prevalence of trichomoniasis in this study compared to other studies which are performed in iran and other parts of the world, we can be hopeful that this infection in clients of Imam Reza hospital of Kermanshah be low but we should consider that this health center, isn't professional hospital for STD and feminine disease. However, given that a high percentage of trichomoniasis patients are asymptomatic and Pap smear is common method for screening cervicovaginal diseases, this method can be useful in assessing the prevalence of trichomoniasis. However, given that the Pap smear method is not accurate method for the diagnosis of Trichomoniasis and Pap smear samples were examined in this study, it is expected the prevalence of trichomoniasis is more than this amount in women of Kermanshah.

However, we need to follow more and educating women about the ways of transmission and prevention of these infections and taking into consideration this point that more than half of the trichomoniasis cases are asymptomatic, it was concluded that only based on symptoms and clinical findings cannot be confirmed diagnosis of these infections.

Therefore, it is recommended for the accurate diagnosis of the disease, in addition to observation, should be used more accurate laboratory methods.

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