

An Epidemiologic Survey on *Trichomonas Vaginalis* Infection in Pregnant Women of Urmia City, North West of Iran, 2015

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Abstract

Background: Trichomoniasis is an extremely common infection worldwide and is associated with important public health problems, including amplification of HIV transmission. This symptomatic and asymptomatic disease is more frequently in pregnant women due to hormonal changes and reducing the vaginal acidity during pregnancy. Thus the aim of this study was to evaluate *Trichomonas vaginalis* infection in pregnant women of Urmia city, North West of Iran for the first time in 2015.

Methods: This descriptive cross-sectional study was conducted on 800 pregnant women who referred to main medical laboratories in Urmia. Vaginal samples were obtained from them and examined by wet mount and culture methods for the detection of *T. vaginalis*.

Results: According to the results, *T. vaginalis* was detected in 29 out of 800 participants (3.63%) by using culture methods whereas only 22 of 29 infected people were positive with the wet mount technique.

Gestational age had a significant relation with Trichomoniasis ($P < 0.05$) while age and symptoms showed no significant relation with Trichomoniasis ($P > 0.05$).

Conclusion: This study showed low prevalence of *T. vaginalis* infection in the study population. Since clinical signs of trichomonal vaginitis are the same of other Sexually Transmitted Diseases (STD), a confirmatory laboratory diagnosis is necessary. Wet mount technique is not as well as culture method sensitive and accurate for detection of *T. vaginalis*.

Introduction

Trichomonas vaginalis is a flagellate protozoan parasite with worldwide importance that is the cause of trichomoniasis, a Sexually Transmitted Disease (STD). The disease causes a broad spectrum of vaginal symptoms ranging from severe itching, inflammation and irritation. In asymptomatic patients, protozoan parasite can provoke malodorous discharge [1-3]. According to data, annually more than 170 million cases are reported [4]. Based on demographic and socio-cultural characteristics, frequency of trichomoniasis in Iran estimated between 1-20% [5].

More important of infection in Iran is persons who don't show any symptoms and carry the parasite. They can't be treated and maintain cycle of transmission. In North America also like Iran, 8 million of new incident cases reported annually [4], with an estimated rate of asymptomatic cases as high as 50% [3,6]. This disease has important medical, social, and economical implications. Also it has been associated with cervical cancer [7,9-12], cytological abnormalities of the cervix [10], atypical pelvic inflammatory disease [13], infertility [14,15], manifested by preterm rupture of membranes, adverse pregnancy outcome, low-birth-weight infants in infected pregnant women and preterm/premature fetus delivery [16,17].

The prevalence of *T. vaginalis* among pregnant women in Urmia city, North West of Iran, is unknown. It appears to be subject to under diagnosis and misdiagnosis in clinical practice because the symptom complex can overlap with other causes of vaginitis. As well, conventional diagnostic tests are often not readily available. The aim of this study was to estimate the prevalence of *T. vaginalis* and associated risk factors in parturient women in Urmia city.

Methods

This descriptive cross-sectional study was carried out on 800 of pregnant women between 17 and 45 years old in Urmia City, North West of Iran, from February to September 2015.

All of the referred women who had used vaginal agents and consumption of antibiotic during the past two weeks were excluded from the study.

Table 1: Trichomoniasis in comparing with demographic variables of the studied population.

Demographic Factors	Trichomoniasis		Total	P
	Positive (n- %)	Negative (n- %)		
Age				
17- 24	8 (3.79)	211 (96.21)	219	0.947
25- 31	11 (3.89)	283 (96.11)	294	
32-38	7 (3.60)	194 (96.39)	201	
39- 45	3 (3.61)	83 (96.39)	86	
Gestational age				
< 36 weeks	12 (2.81)	427 (97.19)	439	0.039
>36 weeks	17 (4.94)	344 (95.06)	361	
Symptoms of STI				
Yes	18 (3.92)	459 (96.08)	477	0.469
No	11 (3.53)	312 (96.47)	323	

After obtaining informed consent from all referred individuals, demographic information such as age, gestational age, and clinical signs and symptoms including vaginal discharge, the color and consistency of discharge, itching, dysuria, dyspareunia, and inflammation of the genital tract were collected through interview and the data were recorded in the questionnaires.

Best method for detection of trichomonas in samples is wet mount that indicated as gold standard. The other method that can be useful is culture [18,19]. Sampling was performed by two sterile cotton tipped swabs from vagina wall and dorsal fornix. First swab transferred to a 15 ml screw-cap tube with sterile TYI-S-33 medium for culture method [19]. The second swab kept in a sterile tube containing 1 ml normal saline for both wet mount microscopy [18].

The swab kept in normal saline was vigorously agitated and pressed against the side of the tube, then one drop of the fluid was directly mounted on a glass slide and examined microscopically at magnifications of $\times 100$ and $\times 400$ within 0.5-3 hours after sampling time. Diamond's TYI-S-33 medium was used for culture of vaginal samples. Cultures were incubated at 37 °C for 7 days [20].

Data analyzed by SPSS v.21 software using Chi-Square test and $P < 0.05$ regarded as significant.

Results

A total of 800 pregnant women were included in this study. The prevalence rate of *T. vaginalis* infection was 3.63%. *T. vaginalis* was detected in 29 out of 800 participants (3.63%) by using culture methods whereas only 22 of 29 infected people were positive with the wet mount technique (2.75%).

Maximum and minimum frequency of trichomoniasis was in age groups 25-31 years 3.89% and 32-38 years 3.60%, respectively. No significant statistically difference was observed about prevalence of trichomoniasis and age factor ($p > 0.05$).

Among all participants, 439 women had less than 36 weeks gestational age and among them 12 (47.72%) were infected and 361 women had upper 36 weeks gestational age. Therefore there was a significant relationship among trichomoniasis and gestational age ($p < 0.05$).

477 pregnant women claimed they had at least once symptoms of STI, while 18 (3.92%) of them were infected with *T. vaginalis*.

Conclusion

After viral infections that affect genitourinary tract, trichomoniasis is the most common sexual transmitted disease. Non sexual transmission of parasite also can occur [21]. Almost 2%-17% of female infants may be infected by their mothers [22]. In the United States, the prevalence of trichomoniasis has been estimated at 25% in those referred to STDs clinics and it is higher in certain population groups such as African American women (38%) [23]. Some studies have mentioned a 25% or higher infection rate in Africa [23]. For example, frequency of trichomoniasis in HIV positive women in Zaire and pregnant women in South Africa reported as 38% and 65% respectively [21].

Also in the same studies amongst pregnant women in Latin America and the Caribbean, trichomoniasis prevalence rates ranged from 2.1% in Brazil to 27.5% in Chile [24,25]. In Africa, pregnant females had prevalence rates ranging from 9.9% in the Central African Republic to as high as 41.4% in South Africa [26,27].

Various data reported about prevalence of disease in Iran provinces, including 9.2% in Tabriz, 3.2% in Tehran, 4% in Babol, 2% in Yazd, 5.6% in Mashhad, 1.37% in Chaharmahal Bakhtiari province, 17% in Zahedan and 10.7% in Bandar Abbas [21]. In this study, prevalence of trichomoniasis was 3.63% by using direct slide and culture method as the gold standard. Our data are similar to 2 studies carried out in Hamadan in 2005 [28], but is different from the study in 2006 (18.1%) [29]. Discrepancies with other studies may be due to different study groups. It may be necessary to pay attention to some special sub groups that have high risk factor of transmission. The results of laboratory diagnostic methods of wet mount and culture revealed that 2.75% and 3.63% of pregnant women were infected with *T. vaginalis*, respectively. This indicated the low sensitivity of wet mount technique and the importance and necessity of sensitive methods for precise detection of the infection. In addition age and there was no statistically significant relationship between age and symptoms with incidence of Trichomoniasis that were confirmed by other researchers [21]. Gestational age is the once of considerable causative agent in the occurrence of vaginal infection during pregnancy, decreasing of acidity of the vagina can be due to hormonal changes and these changes provide opportunities for parasites proliferation and colonization [6,19,22].

In conclusion, the results of this study shows the prevalence of *T. vaginalis* infection in the study population is relatively low and other causes of vaginitis such as bacterial and fungal infections should be more consideration. Since clinical signs of trichomonal vaginitis are the same of other STDs, a confirmatory laboratory diagnosis is necessary. Further studies in different population groups are needed to determine other aspects of epidemiology of this infection in Iran.

Table 2: Detection of *T. vaginalis* in vaginal secretion by parasitological methods.

Method	Trichomoniasis		Total
	Positive (n- %)	Negative (n- %)	
Wet mount	22 (2.75)	778 (97.18)	800
Culture	29 (3.63)	771 (96.24)	800

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