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Original Article

Prevalence of *Trichomonas vaginalis* Infection Among Patients that Presented to Rural Tertiary Care Hospital in Tiruchirapalli, India in 2011 and 2013

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Trichomoniasis is caused by the protozoan parasite *Trichomonas vaginalis*, a relatively neglected area of research. The analysis of the sociodemographic characteristics of patients would be valuable in preventing such infections. The clinical spectrum varies from an asymptomatic stage to mild, moderate or severe symptoms. A total of 434 married women within the age range of 26-55 years were enrolled in this study. The vaginal swabs were taken and smears were prepared for all the subjects for the wet mount examinations to detect Trichomoniasis and Candidiasis, and Gram's stain for clue cells. Among the subjects, 212 are confirmed for bacterial vaginitis, thereby total *Trichomonas vaginalis* (TV) infection found among 35 cases. The TV vaginosis (TVV) alone, TVV with bacterial vaginosis, TVV with candidiasis and TVV with bacterial vaginosis and vaginal candidiasis was found among 10,20,4 and 1 cases respectively. In this investigation, the marital and socioeconomic status was also well determined.

Key words: *Trichomonas vaginalis*, prevalence, rural tertiary care hospital.

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1. INTRODUCTION

Sexually transmitted infections (STIs) are a major global cause of acute illness, infertility, long-term disability and death, with serious medical and psychological consequences to millions of men, women and infants. Over 30 bacterial, viral and

parasitic pathogens have been identified to date that can be transmitted sexually. *Trichomonas vaginalis* is known to be the most common, curable, sexually transmitted infection among sexually active women and may be associated with the acquisition and transmission of HIV. The motile protozoan responsible for trichomoniasis in women is easily viewed with unsophisticated microscopy. Unfortunately, this leads to the impression that, because these organisms are large, motile, and easily seen, wet preparation microscopy is highly sensitive.^{1, 2} This ignores the high organism load necessary for vaginal sampling to capture organisms. Because wet preparations with positive results are obtained from women with high organism loads, it is not surprising that the majority of these women are symptomatic. As a result of this, asymptomatic women are rarely tested outside of sexually transmitted infection (STI) clinic settings.³

Despite having the highest prevalence of any sexually transmitted infection (STI) globally, there is a dearth of data describing *Trichomonas vaginalis* incidence and prevalence in the general population. The lack of basic epidemiological data is an obstacle to addressing the epidemic. Once considered a nuisance infection, the morbidities associated with *T. vaginalis* have been increasingly recognized over the past decade, highlighting the importance of this pathogen as a public health problem. Recent developments in *T. vaginalis* diagnostics and molecular biology have improved our understanding of *T. vaginalis* epidemiology. Improved characterisation of the natural history of *T. vaginalis* infection has allowed us to hypothesize possible explanations for observed variations in *T. vaginalis* prevalence with age. Direct and indirect hormonal effects on the female genital tract provide a likely explanation for the greater burden of persistent *T. vaginalis* infection among women compared with men. Further characterization of the

global epidemiology of *T. vaginalis* could enhance our ability to respond to the *T. vaginalis* epidemic.

Trichomoniasis is often asymptomatic in men, however in more than half of the infected women manifests vaginitis, cervicitis, urethritis, and irritation with frothy malodorous discharge. Negative outcomes of this infection are especially significant during pregnancy. *T. vaginalis* can lead to urogenital tract infection. The incidence of vaginal trichomoniasis has noticeably risen especially in developing countries and in populations with high-risk behaviors such as poor sexual activity hygiene and multiple sexual partners. Poverty, socioeconomic status, low educational level, high risk sexual behaviors, prisoners, and HIV+ or HBV+ infected people are risk factors for acquiring STDs such as vaginal trichomoniasis.⁴ *T. vaginalis* infection is one of the most curable sexually transmitted infections; if untreated it can persist up to 5 years.^{5,6}

Trichomoniasis has neither been the focus of intensive study nor of active control programs in various places and this neglect likely a function of the relatively mild nature of the disease. However available evidence suggests that *T. vaginalis* may play a critical and under recognized role in amplifying human immunodeficiency virus (HIV) transmission and, in some circumstances, may have a major impact on the epidemic dynamics of HIV infection and the acquired immunodeficiency syndrome (AIDS) in the world.^{7,8}

Although no national data exist, Indian women may also have the highest burden of *T. vaginalis* infection. Recent data suggest that designating *T. vaginalis* control a public health priority has the potential to seriously address existing health disparities while also having a significant impact on health care costs.⁹ The main purpose of this investigation is to determine the prevalence and incidence of *Trichomonas vaginalis* infection among the women participating in this study.

2. MATERIALS AND METHODS

2.1 Study area and population

In this study, the clinic based prospective study was carried out at the tertiary care teaching hospital, Tiruchirapalli over a period of 20 months from October 2011 to April 2013. The study population comprised of newly registered female clinic attendees aged from 26 – 55 years. The major exclusion criteria is those who not consenting to speculum examination.

2.2 Date collection

Before collection and processing of the samples, a group discussion was done with focus groups involving patients who suspected with the symptoms suggestive to trichomoniasis. The demographical data including age, occupation, level of education; risk behavior including number of sexual partners, condom usage at last sexual intercourse and the clinical details related to infection.

2.3 Trichomoniasis diagnosis

The classical symptoms associated with infection by *T. vaginalis* include a yellowish green frothy discharge, pruritis, dysuria, dyspareunia and the strawberry cervix which is characterized by punctuate hemorrhagic lesions.¹⁰ For several reasons, diagnosis cannot be readily made solely on the basis of clinical presentations,

1. Identical to those seen with other STDs
2. The frothy discharge is seen only 10% of women with *T. vaginalis*.

The laboratory diagnosis of trichomonal infection has been microscopic evaluation by the wet mount method.

¹¹ In this investigation, vaginal smears were taken from the patients and examined under low power and then high power magnifications for the identification of protozoan. The wet mount showed pear shaped organisms with characteristic jerky movements. Along with this, Human immunodeficiency virus (HIV) and

Venereal disease research laboratory (VDRL) testing also performed to analyze the coinfections.

The ethical clearance for this study was obtained from the institutional ethical committee. Informed verbal consent was obtained from all the participants after explaining the purpose of this study and the patient's identity was kept confidential.

3. RESULTS AND DISCUSSION

3.1 Characteristics of the subjects included

A total of 441 women were included in this investigation and vaginal samples were collected possibly from 98.4% (434 subjects) and 7 individuals refused speculum examination and they were excluded from the study. The prevalence of trichomoniasis confirmed by microscopy was 8.1% (35/434). The socio demographic characteristics including age, marital status and occupation were depicted in the figure 1, 2 and 3.

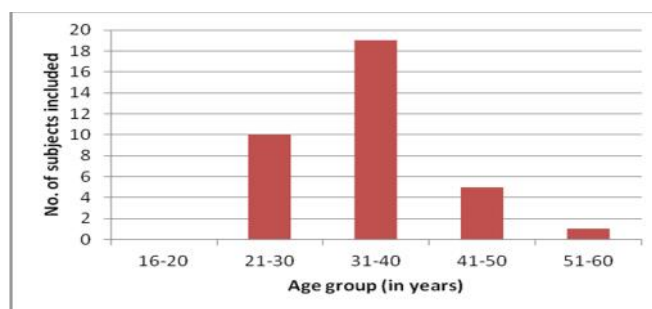


Fig 1: Agewise distribution of the smear positive trichomoniasis cases

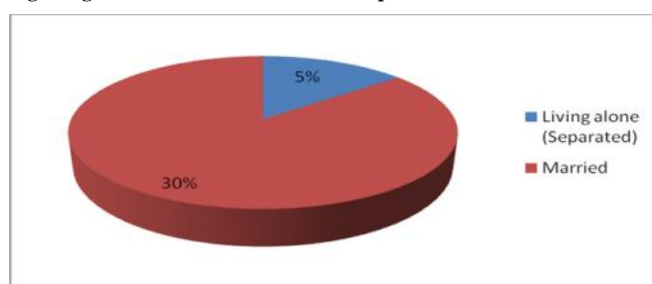


Fig 2: Marital status of the smear positive trichomoniasis cases

The maximum smear positive cases were in the age group of 31 – 40 (sexually active) and the mean age of the entire samples was 34 years. Among the subjects tested, happily none of the them were unmarried and all the subjects were married and most of the smear positive cases were found among the agricultural workers (42.8%) followed by homemakers (26.6%).

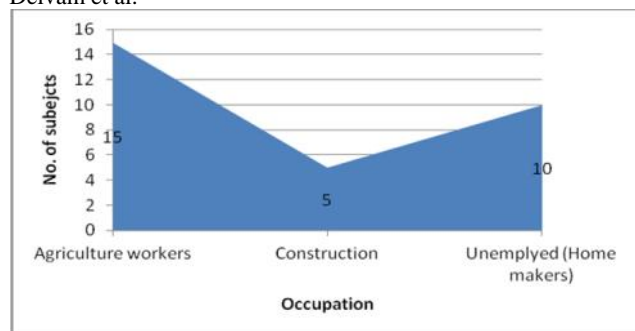


Fig 3: Occupational status of the smear positive trichomoniasis cases

There is no much significant differences in the educational status of the individuals who presented in the clinic for consultation and also those who actually tested positive for trichomoniasis. There were no significant differences regarding other socio demographic status in the trichomoniasis positive subgroup in comparison to the total subjected included.

3.2 Clinical history of *T. vaginalis* positive patients

Among the symptomatic *T. vaginalis* infected subjects, foul smelling discharge and pruritis were the most common features observed in 32 cases (91.4%) whereas cervical abnormalities were observed in 3 cases (8.6%). In this investigation, the straw berry cervix was not observed in any subjects included and the details were interpreted in figure 4. In most of the studies, dysuria is a common symptom identified and reported; but in this investigation, none of the subjected complained about dysuria. But most of them complained about the lower abdominal pain of 82.8% (29/35).

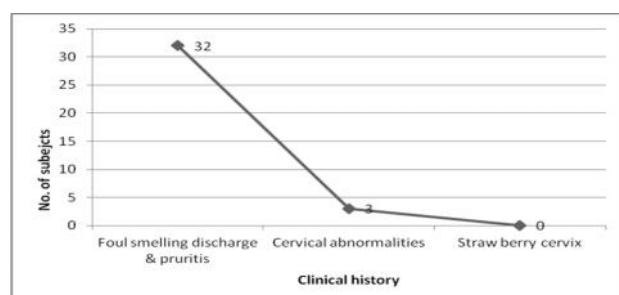


Fig 4: Comparison of clinical features among positive trichomoniasis cases

3.3 Smear examination

Prospective analysis of smear examination under microscope was attempted. Out of 434 subjects included, 35 showed smear positive to trichomoniasis.

Of the 35 women with clinical symptoms, 10 (28.6%) had trichomoniasis alone, 25 (71.4%) had trichomoniasis with concurrent infections. Among the concurrent infections, bacterial vaginosis was the most common infection with trichomoniasis observed among 20 cases (80%). Candidiasis was identified among 4 cases (16%) and cross infection among trichomoniasis, bacterial vaginosis and candidiasis was found in one case (4%) and the details of monomicrobial and polymicrobial descriptions were interpreted in figure 5.

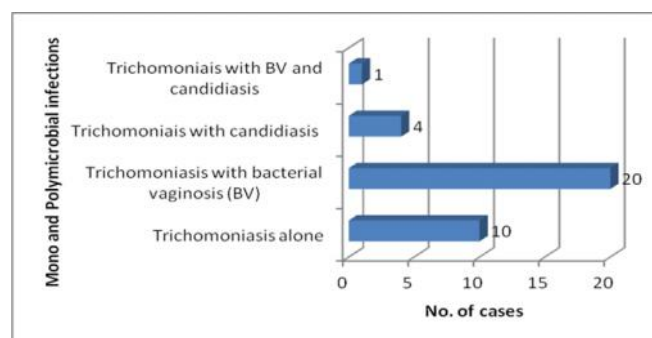


Fig 5: Monomicrobial and Polymicrobial status of the positive TV cases

The HIV and VDRL testing showed non reactive, inspite of syndrome based management; prevalence is comparable with other studies. At baseline of this investigation, prevalence of infection was 8.1%. As estimated in general the overall status is to be 8.6/100 women per year². And the current prevalence also supports the literature that showed an overall prevalence of 4.2% and *T. vaginalis* was isolated in 4.15% of symptomatic and 4.25% of asymptomatic patients. This difference in prevalence might be explained by different socioeconomic status, different sexual habits and practices of people in various geographic regions.¹² Prevalent *T vaginalis* infection was associated with having a concurrent chlamydial infection and incident infections were associated with increased number of sex partners. Further counseling required to reduce the dissemination of this infection.

In African and American studies, more than one-third of the African American women were screened positive for *T. vaginalis* at baseline, and an additional

one-third of women who screened negative for *T. vaginalis* at baseline became infected during the follow-up period. Several factors, biological, sociocultural and economic along with the poor access to information may place women at high risk of infection¹³. The study also highlighted that almost none of these women were aware of their infection status before undergoing screening and few reported having signs and symptoms. Different sets of risk factors were associated with prevalent and incident *T. vaginalis* infection.⁹

The symptoms of trichomoniasis reported by patients in this investigation including frothy vaginal discharge and pruritis are well established.^{12,-14} *Trichomonas* infection involves the urethra as well and dysuria is also a common symptom. The straw berry appearance of the vaginal and cervical mucosa is an observable characteristic in this infection.¹⁵ The normal incubation period for trichomoniasis is 4 – 28 days and if infected, patients are expected to be symptomatic within this period or immediately after, may define the lower risk of identifying the infection in those who has sexual intercourse over 30 days ago.¹⁴

This study also showed that a considerable number of working women (not commercial sex workers) had trichomoniasis. In India, sex and sex related topics are forbidden and sex education also undeveloped. The input in mass media in promoting sexual health is far less when compared to other topics like cardiovascular health due to social and cultural frictions on the subject. Treatment for the sexually transmitted diseases is also proscribed and may have a negative impact on sexual health of the inhabitants that increasing their defenselessness to trichomoniasis and other diseases due to lack of knowledge.

4. CONCLUSION

The diagnosis of *T. vaginalis* infection based solely on clinical symptoms and signs is unreliable and

combination of simple laboratory tests increase the diagnostic performance close to the reference standard (wet mounting), especially in resource poor settings. It is our recommendation that there should be a policy decision to increase the awareness of sexually transmitted diseases in the community via mass media and public institutions as a short term goal.¹⁶ Reproductive health needs of women of urban areas should be addressed with greater importance as they may not have primary health care setting in towns and cities.

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