



A Brief Study on Trichomonas Vaginalis

R. Vijay^{a*#} and Mrinangka Deb^a

^a *Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi (M),
Wardha, Maharashtra, India.*

Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i60B34760

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/80521>

Review Article

Received 15 October 2021
Accepted 20 December 2021
Published 23 December 2021

ABSTRACT

In today's modern world women face too many challenges in front of them and in an country like India. There is still old system in which women can't work. They are kept at home and indulged in household activities and their dreams don't matter. they are not aware of the changes in their own body due to complete negligence or illiteracy. India is still one of the most illiterate countries in the world and its economy is still very low and beyond advancement. India is a developing country and nowadays people are starting to get aware about problems of women. Now in today's society women are allowed to work and they are not kept at their household but are given an opportunity as equals. But still there are many places in India which are not aware about problems faced by women and they don't know how to help them and we have to provide them education about their own healthy bodily practices. Women in the modern and ancient world were affected by many such diseases which causes harm not only to them but also to their young ones if untreated. In the modern culture, now a days a new trend of having multiple sexual partners have become common and therefore, due to unsafe and unprotected sex practices and poor awareness, a lot of diseases has been transmitted worldwide to both genders. Trichomoniasis vaginalis is one of the most common sexually transmitted disease in women caused by a parasite which transmitted during unsafe and unprotected during sexual practices.

Keywords: *Sexually transmitted; wet mount; RT PCR; unsafe sex practices.*

[#] MBBS Student;

^{*}Corresponding author: E-mail: vijayan31301@gmail.com;

1. INTRODUCTION

The sexually transmitted diseases are one of the commonest and most widespread diseases in the current growing world. They are a variety of diseases which come under the section of sexually transmitted diseases causing upper and lower urinary tract infections. Sexually transmitted diseases are communicable and maybe through placental transmission which is also known as vertical transmission. There are many STDs as discussed and it follows as:

Syphilis
HIV/AIDS
Gonorrhoea
Trichomoniasis
Human papilloma virus
Chlamydia
Vulvovaginitis

STDs are caused in almost around the globe but in India it is transmitted in a fast way like a wildfire in the forest as there is lack of awareness and negligence towards the sexual practices and bodily hygiene [1]. These sexually transmitted diseases cause manifestations and problems in our body which may either be locally (caused only in the affected area) or systemic (spread to other places of body through a variety of circuit [1].

These may be either direct that means without an intermediary path and travels through add on and causes the following malady in the *homo sapiens*. The other circuits or the pathways of passing on the disease is by the lymphatic spread to the close by regional lymph nodes or due to the hematogenous spread in the bodywork physique. In the hematogenous spread it is spread through blood by just flowing in the blood and reaches various organs and causes some problems in the organ and the organs commonly involved are the liver, lungs, brain and bones. The spread of these invasive diseases affects the body and the cells of body such as the parenchyma. The purpose of studying these sexually transmitted diseases is to determine the problems and factors and to reduce the development of another complex diseases. The lesions are caused not only in women but also in both the sexes of man and women due to unsafe and unhygienic sexual practices [2]. The female genital tract infections include infections in vagina and is caused due to parasites such as

trichomoniasis causes trichomoniasis vaginalis and this is a protozoa infection [2].

The activating agent of this infection is found out to be a protozoa parasite and the name of the disease is *Trichomonas vaginalis* and this is one of the most features affecting the female reproductive tract and producing cases of affecting the vaginal areas and causing of vaginitis. Despite the fact that trichomoniasis is a rapidly identified and treated sexually transmitted infection (STD), it is not a reportable condition, and treatment of the infection has got very little [2].

Women in the modern and ancient world were affected by many such diseases which causes harm not only to them but also to their young ones if untreated. In the modern culture, now a days a new trend of having multiple sexual partners have become common, and therefore due to unsafe and unprotected sex practices due to poor awareness a lot of diseases has been transmitted worldwide to both genders [3].

The infection causing parasite appears to be a pear-shaped fungus that grows to be around 10-13x8-10 mm in size. The organisms that have been attached and dyed have shrunk by around 25%. They feature four anterior flagella and a cytoplasmic fold, the flowing undulating membrane, on one side of the body for about a third of its length. The coat is supported by a third rod, and a fifth flagellum attached there creates a wave-like motion. Protozoa infection in women frequently manifests itself in clinical signs throughout their reproductive years [3].

2. EMPIRICAL REVIEW

The disease is clinically manifested and featured with pain discharge from the female either from the cervix or vaginal causing vaginal discharge. Period goes from 3 to 28 days. In ladies, trichomoniasis cause as something from a symptom less contamination to an intense fiery illness, with a plentiful, rotten release. The seriousness of the release could adjust after some time. And this happens due to the unawareness of personal hygiene and healthy bodily practices and clinical negligence leaves it untreated. If untreated, the disease is likewise extemporaneous lost or may continue for a long time. The release is traditionally portrayed as foamy, in any case, it's foamy in with respect to

10% of patients. The shade of the release might fluctuate [3].

These signs and symptoms of this disease is represented with cases are cyclic and worsen around the time of menses. In chronic infection, the predominant symptoms are mild, with itch and dyspareunia, whereas the vaginal secretion is also terribly scanty and mixed with mucus. this type of unwellness is especially important from the medical specialty purpose of reading as a result of these people are the main supply of transmission of the parasite [4].

Up to 25 to half of tainted young ladies are symptom less and have a standard epithelial conduit pH of 3.8 to 4.2 and a typical vaginal verdure. However there's a transporter structure, half of those ladies can foster clinical manifestations all through the following about a half year. however talk is that the most average appearance of T. vaginal disease in ladies, Bartholin's organ is a periodic focal point of contamination. Elective intricacies identified with protozoa contamination embrace adnexitis, pyosalpinx, endometritis, fruitlessness, low birth weight, and cervical disintegration. protozoa disease is also identified with exaggerated HIV transmission. The degree of the fiery reaction to the parasite could affirm the seriousness of the side effects.. In each sex, scattering on the furthest side of the lower framework lot is exceptionally uncommon and isn't frequently found even in seriously agitated patients. A special characteristic of T. vaginal infection is that it's often recurrent, with no lasting immunity, suggesting the importance of innate immunity. Epithelial ductus infection is sometimes done on the premise of clinical symptoms, however in women, the characteristics of the vaginal discharge, as well as color and odor, are poor predictors of T. vaginal. Detection of T. vaginal organism is crucial to the diagnosis of T. vaginal as a result of the clinical signs and symptoms are unreliable, and as several as 50% of cases are symptom less [4].

A recent specimen from the vaginal secretion is taken and transferred by a sterile wire loop to a glass slide, a canopy slip is going to be placed on it and so be examined victimization high power, dark-field, or section distinction research [4].

3. MICROSCOPIC EXAMINATION

Since now after the identification of the microorganism causing this common STD was

found out to be a protozoal parasite, the laboratory diagnosis and the microscopic examination should be done and the parasite causing the infection in the human beings is found to be a motile parasite. The disease which is discussed might not be easy because the protozoa has a miscellaneous or varying presentation and there might be a grade of hardness and difficulties lined up with the test for diagnosis. There is an old and cost efficient and trusted method which has been used over a period of years and this is the Wet mount and in the modern and current growing world there has been named a method which might be commanding and more useful in the lab diagnosis. This is the In-pouch method. The parasite is happen to be found in the cervical secretions and that too maybe in the duct of epithelium . 34%-49% is the sensitivity for the dark microscopy wet culture technique. The medium used for culture is diamonds medium. It is found to be more useful . and it is also proven that this can be cultured in a cell process in vitro. This helps to induce or produce cell line of varied or different variety [4].

The diagnostic test is done and the result might be provided within a span of an analogous grade of time span including around 2-7 days. During his time span it is also evitable that the virus might multiply more in the body and the probabilities and odds of the infections spreading is increased since the odds are in the favour of the cultures spreading the virus in the infected people and this might enlarge or expand the susceptibility of the diagnosis [5].

The lymphatic spread to the close by regional lymph nodes or due to the hematogenous spread in the bodywork physique. In the hematogenous spread it is spread through blood by just flowing in the blood and reaches varies organs and causes some problems in the organ and the organs commonly involved are the liver, lungs, brain and bones .the spread of these invasive diseases affects the body and the cells of body such as the parenchyma [6].

Papanicolaou staining has a lot of appeal in the diagnosis of protozoa infection. Because T. vaginalis does not always appear in its characteristic pear-shaped form with flagella, staining approaches have limits. It appears as spherical forms that resemble polymorphonuclear leukocytes, and conventional morphologic traits are usually lost during fixation and staining, making etiologic identification difficult [6].

Trichomonas vaginalis is a frequent infecting sexually transmitted disease due to unsafe and unhygienic sexual practices due to lack of awareness about the sexually transmitted disease in a growing population of more than a billion . and these are type of infections which does not stay with just the infected person but also has the virulence of affections ones own body by affecting the common body host immune complexes [7]. PCR which appears to be an alternate method for detecting venereal trichomoniasis infection. Apart from PCR tests there are other types of polymerase chain reaction used in the finding out and identifying process. These may include Multiplex PCR.

Real Time PCR and the RT-PCR is done through a swab culture or test . the more frequently used and most detectable and easily available swab is through the vaginal canal and it is knows as the vaginal swab which is preserved in suitable culture medias .tubulin cistron may fail due to numerous amount of genetic and special variance produced in sequence .there are many techniques employed to find out the presence of the protozoa parasite in the body's framework. This may include the basically and most frequently used wet mount. The trichomanias channels which are found out to be examined and identified in the vaginal canal by swab culture techniques prove that more than >90% of the infections which are caused are in the

exterior or external region of cervical region/ cervix, and the clinical and laboratory findings and studies which are established due to various methods prove that there are infections are manufacture produced are produced from the endocervical region . but the patients suffering from endocervical manifestations during the peak of infection have shown that studies prove about 13% of the infections are produced [7]. There are certain symptoms which are exclusively produced in the gender of females than male. These symptoms in women include erythroderma and not only this but also a variety of surface necrosis, the breaking down and disintegration of tissues of the animals and severe infiltration by the poly morphs, and these are just a group of wbc's and their granular cytoplasm which has their important function as phagocytosis and macrophages are seen in biopsies of cervical and epithelial ducts [8].

The symptoms by the common and least common protozoal infections may include some clinical features and manifestation such as the discharge of the epithelial duct , dysuria, and vaginitis the patients diagnosed can be produced to have the skin irritation chemical sensation. The studies and some famous research article also provide us with the information that there might or might not be around discharge which is about to be estimated of 65%-73%. Frothy and yellow in12%-28%, and approximately 2% [9].

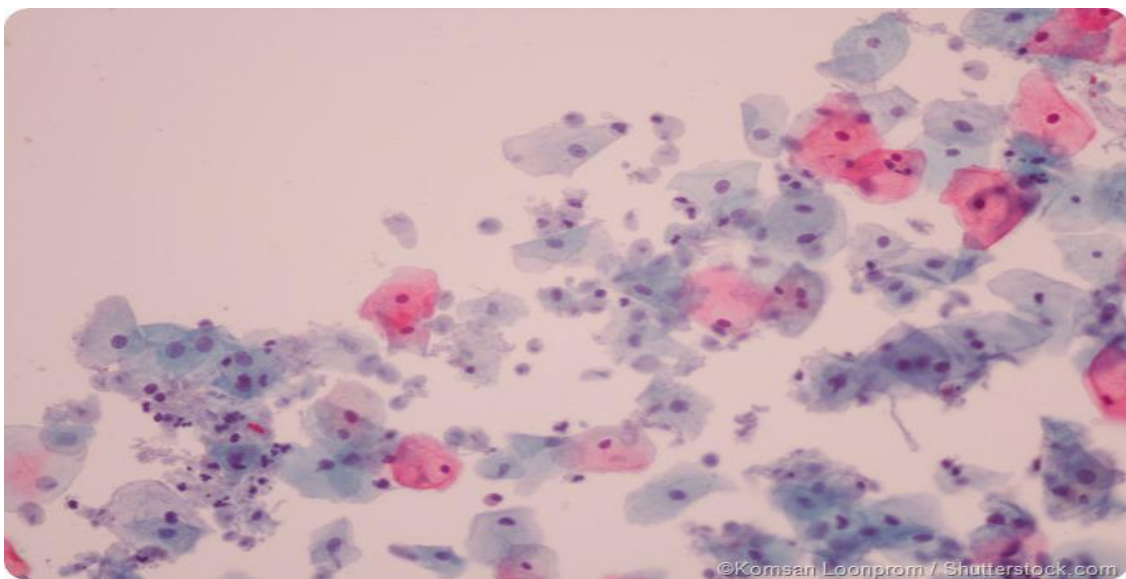


Fig. 1. Protozoal infections

3.1 Antibody-based Techniques

There are various methods to detect the disease but some tests are not specific because their specificity is low for the diagnosis of the diseases which is caused. Therefore, more proper and accurate and specific tests are preferred for the approximate diagnosis of the trichomoniasis disease which is a sexually transmitted disease caused due to poor hygiene and unsafe and unprotected habitual sexual practices [9]. Therefore, the diagnostic test for the trichomoniasis vaginalis is to find the antibodies (Ab) produced against the antigens produced by the protozoa. The human body produces antibodies due to various immune complex mechanisms produced by the host immune system with the help of T cells and the CD4 T cell mechanism. Therefore, these antibodies can be detected in the host framework serum level which may be low and titering which is a feature or a trait produced by the infection-contaminated individual. In the modern era, a variety of laboratory procedures are followed for the easy identification of these complex sexually transmitted diseases. Various methods, including agglutination, complement fixation, indirect hem-agglutination, gel diffusion, fluorescence, and opsonin produced by IFT, and ELISA [10].

There are various other tests and methods used to diagnose and confirm the disease. The tests and methods for testing at the molecular level may include various recently developed DNA methods which have significantly enlarged at the molecular level with increased specificity and it has a lot of scope in the future to be more accurate and more specific, neglecting the inconclusive diagnosis and to note the respective changes on the epithelial lining of the vagina. These epithelial changes may be produced which might be caused due to protozoa parasite causing disease in the living individual, mainly of the reproductive stage of their life where they have a regular sexual drive. Many types of chain reactions are also done to diagnose properly [10].

These may include the PCR which appears to be an alternate method for detecting venereal trichomoniasis infection. Apart from PCR tests, there are other types of polymerase chain reaction used in the finding out and identifying process. These may include MULTIPLEX PCR, REAL TIME PCR, and the RT-PCR. As you all commonly know, RT-PCR is done through a swab culture or test. The more frequently used and

most detectable and easily available swab is through the vaginal canal and it is known as the vaginal swab which is preserved in suitable culture media. Tubulin cytoskeleton may fail due to numerous amounts of genetic and special variance produced in sequence [10].

There are many techniques employed to find out the presence of the protozoa parasite in the body's framework. This may include the basic and most frequently used wet mount. But its specificity is not in the expected range that it can be confidently confirmed. Since the percentage is about 58.97% whereas a 100% specificity is difficult to obtain for any medical laboratory test, but the PCR has done a good job in testing out the sample and processing and singling out the differences produced by various microbial agents in causing the most common STD's and by the way, the PCR are using primers. Targets Tv-E650 had 80% sensitivity and 97.95% specificity [11].

Adding to this information, Multiplex PCR is a standard approach method for detecting co-infecting infections during the same gap of interval of time span. Multiplex PCR was introduced and helped in detecting the primer of the protozoa parasite. Improvisation of which might be of TvA5, this is a primer used in the following victimization of in the investigation primer and this might result in the test for the almost accurate infection caused. It is used in both the sexes of the canals of the men and women respectively [11].

4. DISCUSSION

Trichomonas vaginalis is a frequent infecting sexually transmitted disease due to unsafe and unhygienic sexual practices due to lack of awareness about the sexually transmitted disease in a growing population of more than a billion [12]. These are types of infections which do not stay with just the infected person but also has the virulence of affecting one's own body by affecting the common body host immune complexes and still affect the other person through coitus interruptus. When it is conducted unsafely or with multiple sexual partners, a common explanation for vaginitis due to the clinical features which is changed obviously before the starting of the affecting manifestations and many of the times the manifestations or features produced associated with the disease might be rare or transient or maybe more clinically infecting and affecting the individuals of

less immune system there are many standard and golden standard techniques and methodical advancements to find out and diagnosed [13].

The above present protozoal parasite infection which affects the male and females mostly where the females are slightly more affected in this in case and these parasite can be seen or identified or observed in the laboratory under powerfully scoped and equipped microscopic examination to identify and diagnose the methods for the detection during these procedures there may be present . and in the case of examination of the method of wet scope is sort of rapid and it is more preferred over the others test cause 10^3 ml

of the unkilld and live protozoa is needed for the identification of the the disease infection caused by the protozoa parasite .the most least and less maybe a minimum inoculate may demand the positive result to prove that a positive result [13].

However the findings of the PCR seems to be the typical tactical accumulative alternative for the identification and gathering specific laboratorial infection against the venerable infection to the host body framework causing the mode of venereal trichomoniasis against finding infections with high sensitivities and wonderful specialties for each of the collected vaginal samples from the swab cultures [14].

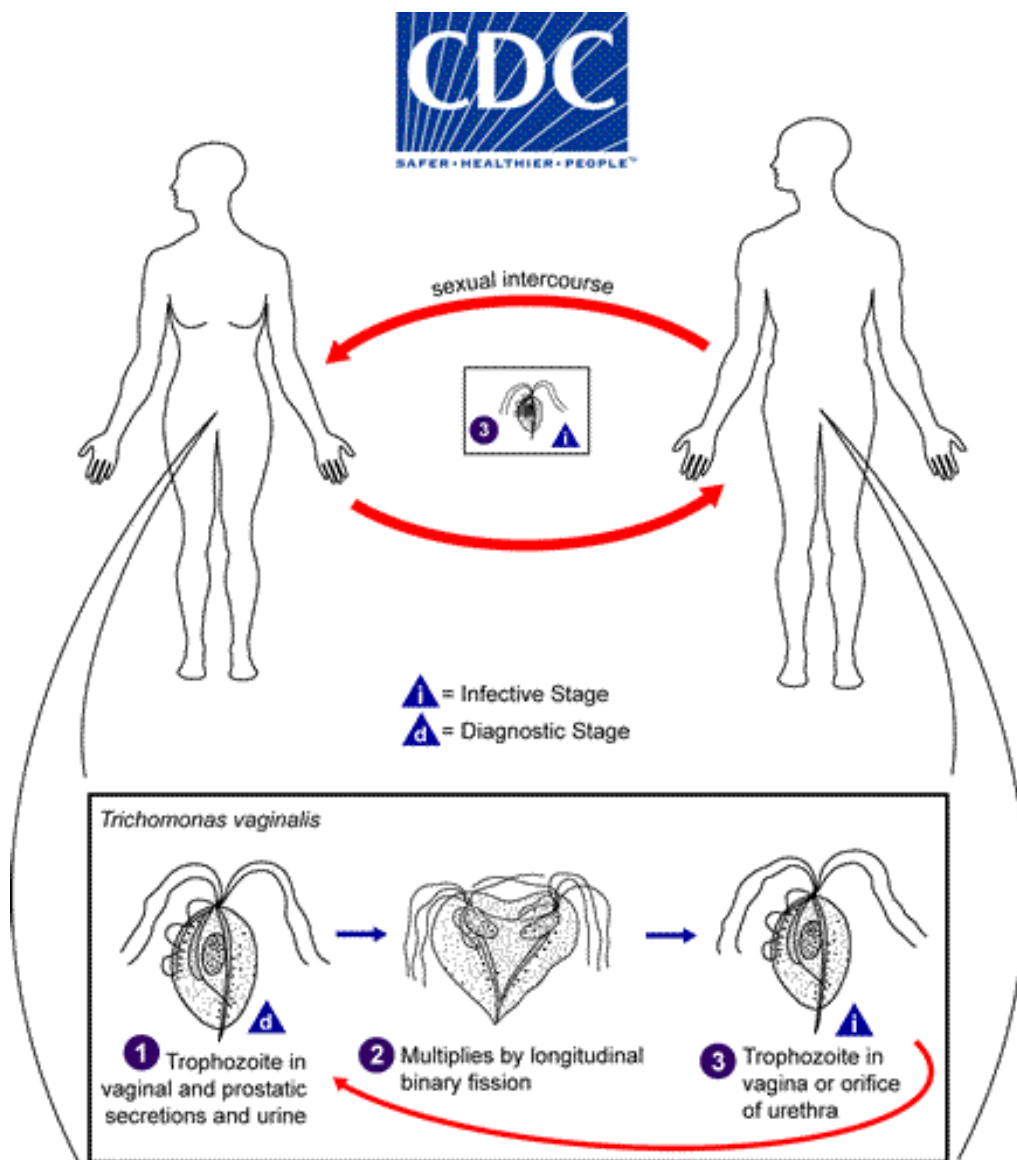


Fig. 2. Antibody-based techniques

5. CONCLUSION

In India and in this growing population due to least awareness programs women are still facing difficulties and health educated problems which lacks them from having taking care of themselves when they bound to know about their primary or secondary clinical manifestation or infection produced in the body and treating it rather than diagnosing in the last state when its almost not curable or almost out of our reach to cure the disease and bring one's normal routine life back. *T. vaginalis* is still common among women who have vaginal discharge, with sexually active women bearing a greater risk load. Health promotion and education, as well as strategies aimed at raising illness awareness among these high-risk groups, are required.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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