



Trichomonas vaginalis

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Introduction

Trichomonas vaginalis, a genital flagellate, is the most common pathogenic protozoan in industrialized countries.

It is found from vaginal secretions and secretions from the male urogenital tract.



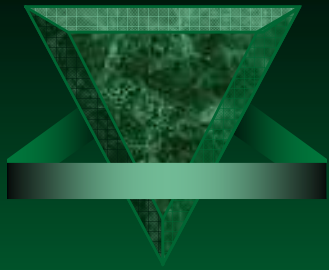
Epidemiology

- ✓ Occurs worldwide.
- ✓ More than 200 million people worldwide are infected with this parasite each year. Pregnant women infected with *T. vaginalis* are 30% more likely than uninfected women to deliver preterm or to have a low birth weight infant.
- ✓ **Age & Sex distribution** : Symptomatic cases are more in female than male and it is common in adults.
- ✓ **Risk groups**
 - Higher prevalence among persons with multiple sexual partners or other venereal diseases.
 - The prevalence of *T. vaginalis* infection at clinics treating sexually transmitted diseases (STDs) varies from 8-31%.



Taxonomy

- ✓ *Phylum - Metamonida,*
- ✓ *Class - Trichomonidea,*
 - *Order - Trichomonidida,*
 - *Family - Trichomonadidae,*
 - *Genus - Trichomonas,*
 - *Species - T. vaginalis*



Morphology

It has only trophozoite stage, there is no cystic stage.

It has a pear-shaped body 7 to 23 μm long, a single anterior nucleus, three to five forward-directed flagella, and a single posteriorly directed flagellum that forms the outer border of an undulating membrane.

A hyaline rod-like structure, the axostyle, runs through the length of the body and exits at the posterior end.

T. vaginalis inhabits the vagina in women, the prostate and seminal vesicles in men, and the urethra in both sexes.

Division is by longitudinal binary fission.



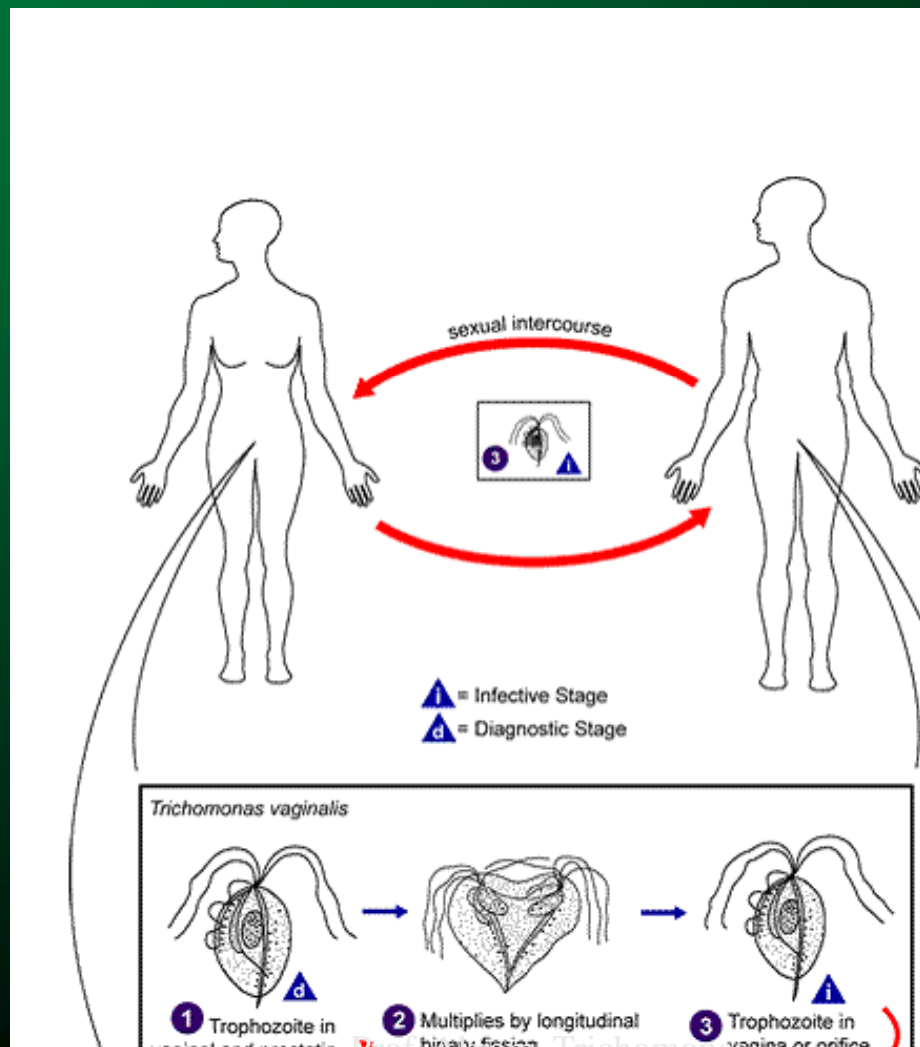


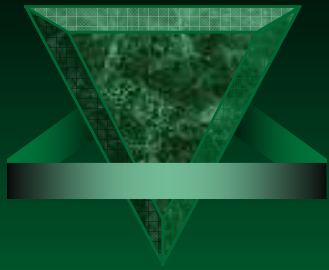
life cycle

- ✔ Trichomonads have the simplest kind of protozoan life cycle, in which the organism occurs only as a trophozoite (NO CYST).
- ✔ It passes its life cycle in only one host, humans. Trophozoite stage is the infective stage and is transmitted primarily via sexual contact.
- ✔ It is occasionally found in virginal females/males and newborn infants suggesting that it is transmitted via contaminated washcloths, clothes and towels.
- ✔ It multiplies by longitudinal binary fission.
- ✔ Reproduction of the parasites occurs every 8-12 hours.



Life cycle





Life cycle at a glance

Life cycle at a glance

Life cycle stages : Only Trophozoites, NO CYST

Infective stage : Trophozoites

Pathogenic stage : Trophozoite

Route of infection : Sexual & occasionally via fomites

Site of localization : Vagina in women, prostate and seminal vesicles in men, and the urethra in both sexes.



Virulence factors

- ✓ *T. vaginalis* is not a highly virulent parasite.
- ✓ Its virulence is low and mostly associated with asymptomatic infection or mild infection.
- ✓ Inflammatory response of the host due to the presence of the parasite may explain the pathogenicity.



Pathogenesis

- ✓ Most strains are of such low pathogenicity that the infected person is virtually asymptomatic. Other strains cause intense inflammation, with itching and a copious white discharge (leucorrhoea) that is swarming with trichomonads. They feed on bacteria, leukocytes and cell exudates and are themselves ingested by monocytes.
- ✓ After infection there is degeneration of the vaginal epithelium followed by leukocytic infiltration - vaginal secretions become abundant and white or greenish and the tissue will become intensely inflamed. Acute infection will become chronic with occasional flare-ups. In men trichomonas infection is usually asymptomatic - although there may be an irritating urethritis or prostatitis
- ✓ *Trichomonas vaginalis* was isolated in 14-60% of male partners of infected women and in 67-100% of female partners of infected men. It may be due to the effect of prostatic fluid that contains zinc and other substances on trichomonads.



Clinical Features

- ✓ Clinical manifestations of trichomoniasis varies with sexes.
 - **In women** - About 50% of women are asymptomatic carriers and the other 50% complain of vaginitis with a purulent discharge and can be accompanied by vulvar and cervical lesions, abdominal pain, dysuria and dyspareunia.
 - The incubation period is 5 to 28 days. If untreated it may progress to a urethritis or cystitis. It is seldom symptomatic before the onset of menses in a young girl (menarche). In pregnancy, the infection can be passed from a mother to a newborn daughter.
 - **In men** - the infection is frequently asymptomatic; occasionally, urethritis, epididymitis, and prostatitis can occur. The infection can progress to prostatitis, urethritis, epididymitis and superficial penile ulcerations.



Laboratory Diagnosis

✓ Principle :

- Demonstration of the parasite by microscopic examination and immunofluorescence are used for laboratory diagnosis.
- Detection of parasite by culture is helpful in asymptomatic cases. DNA based tests (PCR) are also available.



Treatment

- ✓ The treatment of choice is **metronidazole**, except in the first trimester of pregnancy, when clotrimazole is used topically for 14 days. A large single dose of 2 gm by mouth is as effective as longer term treatment of 500 mg twice daily for 7 days. The 2 gm metronidazole dose has a 90-95% cure rate and good compliance since it is an all at once dose. Other nitroimidazoles such as nimorazole or ornidazole are also effective.
- ✓ It has also been suggested that the intravaginal application of the spermicide, nonoxynol-9, may have some effect against metronidazole resistant *Trichomonas*.
- ✓ Other agents such as mebendazole and furazolidone may be effective for treatment of metronidazole-resistant trichomoniasis
- ✓ **It is important that sexual partner must be treated, otherwise there will be reinfection. Metronidazole is also effective in treating male partners.**



Prevention

- Because of the frequent role of asymptomatic men in spreading trichomoniasis, control of this infection necessitates examination and, if necessary, treatment of male sex partners.
- **Avoidance of sexual intercourse and the use of condoms are effective ways to prevent transmission.**
- Treatment of both sexual partners at the same time is recommended to prevent "ping pong" reinfection.



Other Trichomonads

- ✓ *T. tenax*, and *T. hominis* are two other trichomonads that are present in humans. They are usually commensal of mouth and intestine respectively.
- ✓ *T. tenax*, inhabits the human oral cavity, occurring particularly in tartar, cavities, and at the gingival margins. It has been reported, rarely, in lung or thoracic abscesses.
- ✓ *T. hominis* inhabits the intestinal tract in the area of the cecum. There is no evidence that the parasite is pathogenic.
- ✓



Summary

- ✔ *Trichomonas vaginalis* is a flagellate of genital tract, which has no CYSTIC stage, only pear shaped trophozoites with median body and 4-5 flagella found. The trophozoite form is pathogenic, infective and diagnostic stage.
- ✔ *T. vaginalis* causes vaginitis in female and urethritis in male. Asymptomatic cases are more in male than female.
- ✔ Diagnosis of Trichomoniasis is based on the identification of trophozoites of *Trichomonas vaginalis* by microscopic examination of vaginal discharge from female or secretion from urethra or prostate in case of male. Culture is helpful in asymptomatic cases. PCR and DOT- blot tests are also available.
- ✔ Trichomoniasis can be effectively treated by metronidazole. Both the partners should be treated to prevent reinfection.



Study Questions

1. What is the clinical significance of *Trichomonas vaginalis*?
2. Describe peculiarities of morphology of *Trichomonas vaginalis*?
3. Write about the laboratory diagnosis of *Trichomonas vaginalis*? Which test is most sensitive?
4. How will you treat a case of Trichomoniasis? How it can be prevented?
5. Write in short about the pathogenesis of Trichomoniasis? Why males are more asymptomatic than females?