Lower Genital tract infections & Sexually Transmitted Diseases

JUH/5th year Medical Students

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The vaginal pH

- **The vaginal pH value is age-dependent.**

- **The normal vaginal pH value for a woman of reproductive age ranges from 4.0 to 4.5, but the value may be slightly higher than 4.5 among premenarchal and postmenopausal women.**

Normal Flora of the vagina

- **Vaginal microorganisms are the primary stabilizers of the vaginal ecosystem.**
- ***Lactobacillus acidophilus*** **is the primary player.**
- **This microorganism can ferment glycogen derived from the decay of eutrophic vagina mucosa into lactic acid and subsequently release hydrogen ions.**
- **The result of this metabolism is an acidic pH of 4–4.5, and the resulting acidic vaginal environment provides a protective effect.**

Normal Flora of the vagina

- **Under normal circumstances, the vagina has a self-cleaning function. It does not require any special procedures or solutions beyond normal bathing with clean water.**

- **Excessive cleaning or douching of the vagina can not only rinse away vaginal secretion, but can also create an unbalanced vaginal flora with an abnormal vaginal pH environment.**

- **Any disruption of the healthy vaginal environment can predispose the patient to vulvovaginitis.**

Normal vaginal secretions

- **Normal vaginal secretions are clear, odorless, floccular in consistency, and usually located in the dependent portion of the vagina (posterior fornix).**

- **They are composed of vulvar secretions from sebaceous, sweat, Bartholin and skene glands, transudate from the vaginal wall, exfoliated vaginal & cervical cells, cervical mucus,, endometrial & oviductal fluids.**

Vaginitis

- Bacterial Vaginosis (BV) (40%-50%)
- Vulvovaginal candidiasis (20%-25%)
- Trichomoniasis (15%-20%).

Wet Mount and Gram Stain preparations

- Wet mount and Gram stain preparations were examined microscopically to assess for the presence of leukocytes, epithelial cells, trichomonads, clue cells, hyphae, pseudohyphae or budding yeasts.

Vaginal Wet Mounts

- **Vaginal wet mounts are not done during menstruation**
- **Vaginal irrigation, tampon use or sexual intercourse (potentially disrupting the vaginal pH) should be avoided for 24 hours before the test.**
- **Vaginal medicines (such as a nonprescription vaginal yeast medicine) should not be used during the 2 to 3 days before the test.**
- **The sampling is done with the patient in lithotomy position.**
- **A speculum is used to facilitate use of a swab or spatula to sample fluid inside the vagina.**
- **The sampling procedure may cause some discomfort and minor bleeding, but otherwise there are no associated risk.**

The vaginal pH

- **the vaginal fluid pH is a useful and unique marker for vaginitis. Abnormal pH values increase the possibility of vaginitis, and the measurement of vaginal pH has been used for initial screening of lower genital tract infection.**

- **pH value of more than 4.5 denotes vaginitis and bacterial vaginosis (BV). However, with a trichomonas vaginalis infection, the pH value may be increased to 6.5 or more.**

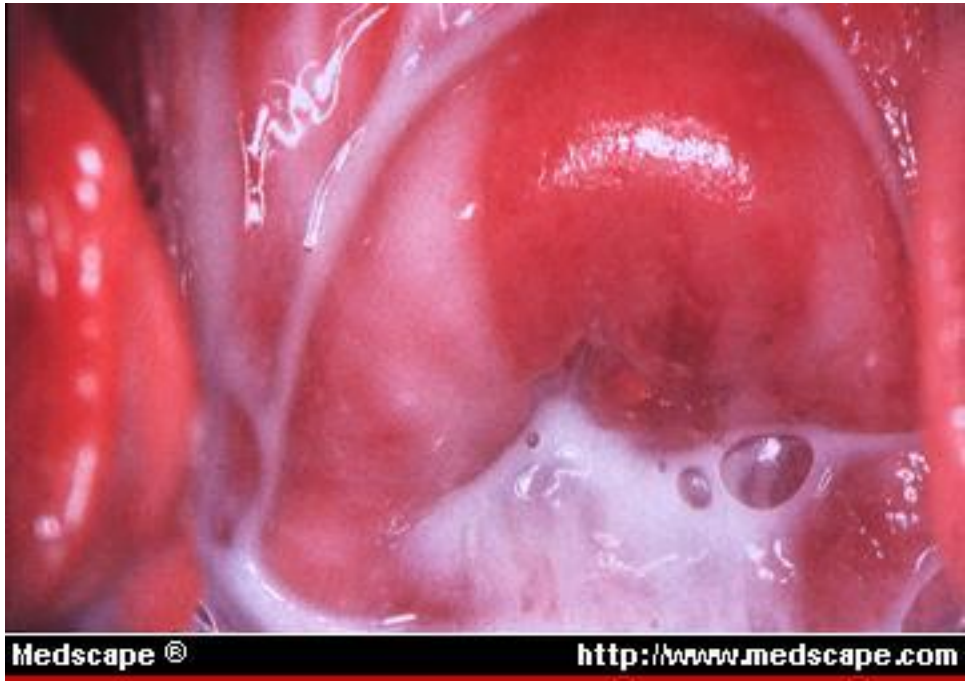
A pH indicator to detect vaginal alkalinization (here showing approximately pH 8)

Bacterial Vaginosis (Nonspecific Vaginitis or *Gardnella* Vaginitis

- An Alteration of normal vaginal bacterial flora that results in the loss of hydrogen peroxide producing lactobacilli and an overgrowth of predominantly anaerobic bacteria.
- including *Gardnerella vaginalis*, the *Mobiluncus* species, *Mycoplasma hominis*, and the *Peptostreptococcus* species

Bacterial Vaginosis

- Bacterial Vaginosis characterized by homogenous milky or creamy, fishy odor discharge that smoothly & thinly coats the vaginal walls.



Diagnosis

- Bacterial vaginosis is usually diagnosed with the Amsel criteria and Gram staining.

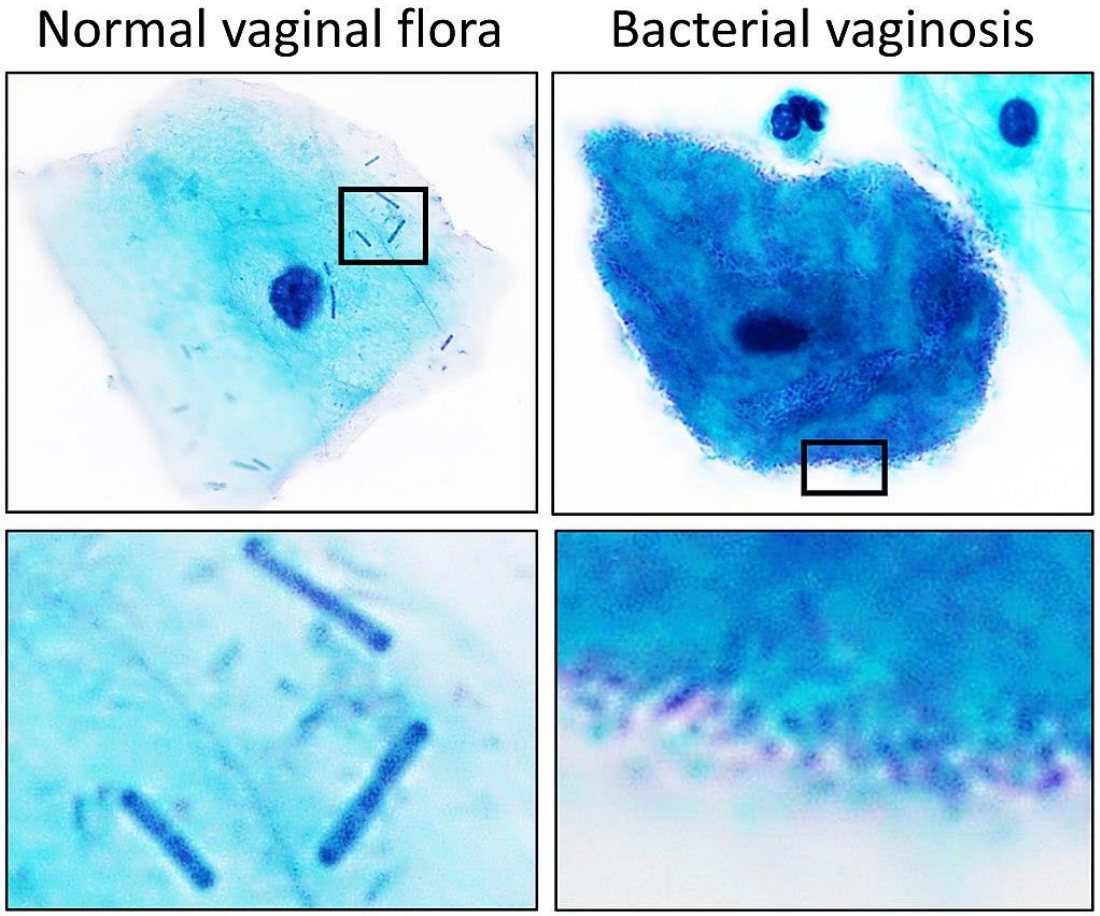
- Culture of *G.Vaginalis* is not recommended as a diagnostic tool because it is not specific.

Diagnosis of BV

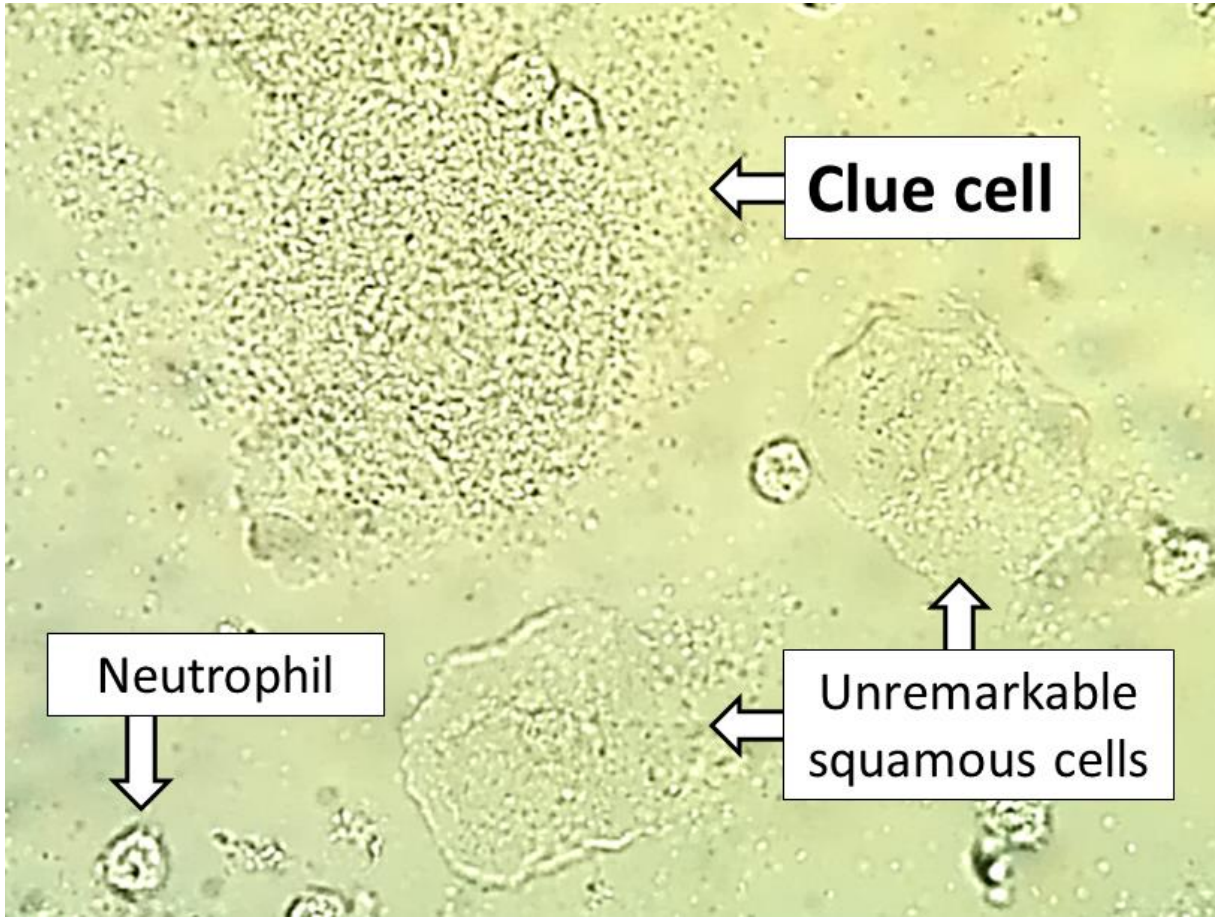
➢ (Amsel criteria):

- **Three of the four following criteria must be met**:
- 1- Vaginal discharge is thin,milky and homogeneous & smells fishy when mixed with potassium hydroxide ("whiff test")
- 2- The PH of the secretions is >4.5 (usually 4.7-5.7).
- **3- >20% of the epithelial cells are clue cells (the single most reliable predictor)**
- 4- Whiff test: addition of 10% KOH to the vaginal secretions releases fishy amine-like odor

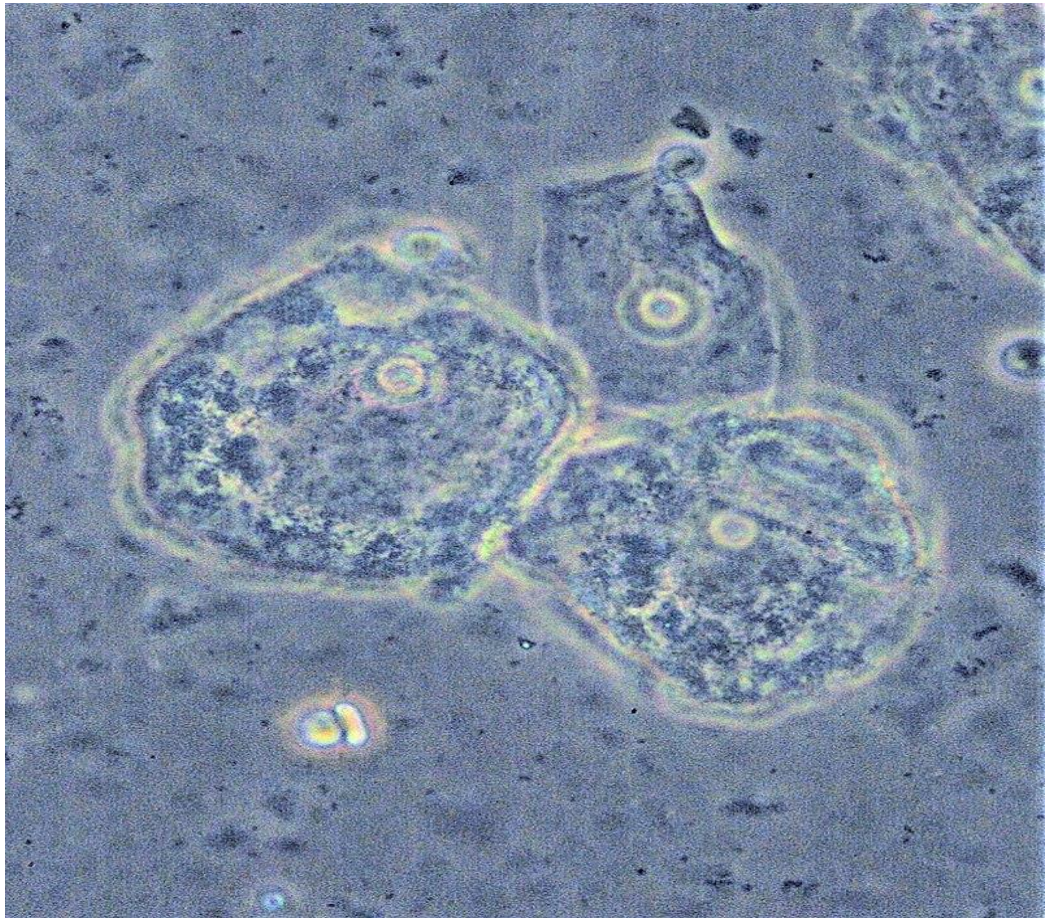
Vaginal squamous cell with normal vaginal flora versus bacterial vaginosis on Pap stain. Normal vaginal flora (left) is predominantly rod-shaped *Lactobacilli* whereas in bacterial vaginosis (right) there is an overgrowth of bacteria which can be of multiple species



A vaginal wet mount with a clue cell, indicating bacterial vaginosis



Phase contrast microscopy of clue cells in a vaginal swab



Recommended Regimens for nonpregnant woman

- 1- Metronidazole 500 mg orally twice a day for 7 days.
- 2- Metronidazole gel, 0.75%, one full applicator (5 g) intravaginally, once a day for 5 days

- **The overall cure range from 75%- 84% with the above regimens.

- 3- Clindamycin cream, 2%, one full applicator (5 g) Intravaginally at bedtime for 7 days.

- 4- Clindamycin 300mg, orally twice daily for 7 days.
- 5- Clindamycin ovules, 100mg, intravaginally once at bedtime
- for 3 days

Bacterial Vaginosis Sequalae

- Many Studies shows Association of (BV) with mid-trimester miscarriage, preterm labour, rupture of membranes and endometritis.

- Bacterial vaginosis may have sequelae similar to pelvic inflammatory disease (PID) and tubal infertility.

- The results of clinical trials indicate that a woman's response to therapy and the likelihood of relapse or recurrence are not affected by treatment of her husband. *Therefore, routine treatment of husbands is not recommended.*

Vulvovaginal candidiasis

- The infectious agent in 80–90% of patients is *Candida albicans*
- Other species of candidia, such as *C.glabrata* and *C. tropicalis* can cause vulvovaginal symptoms and tend to be resistant to therapy.

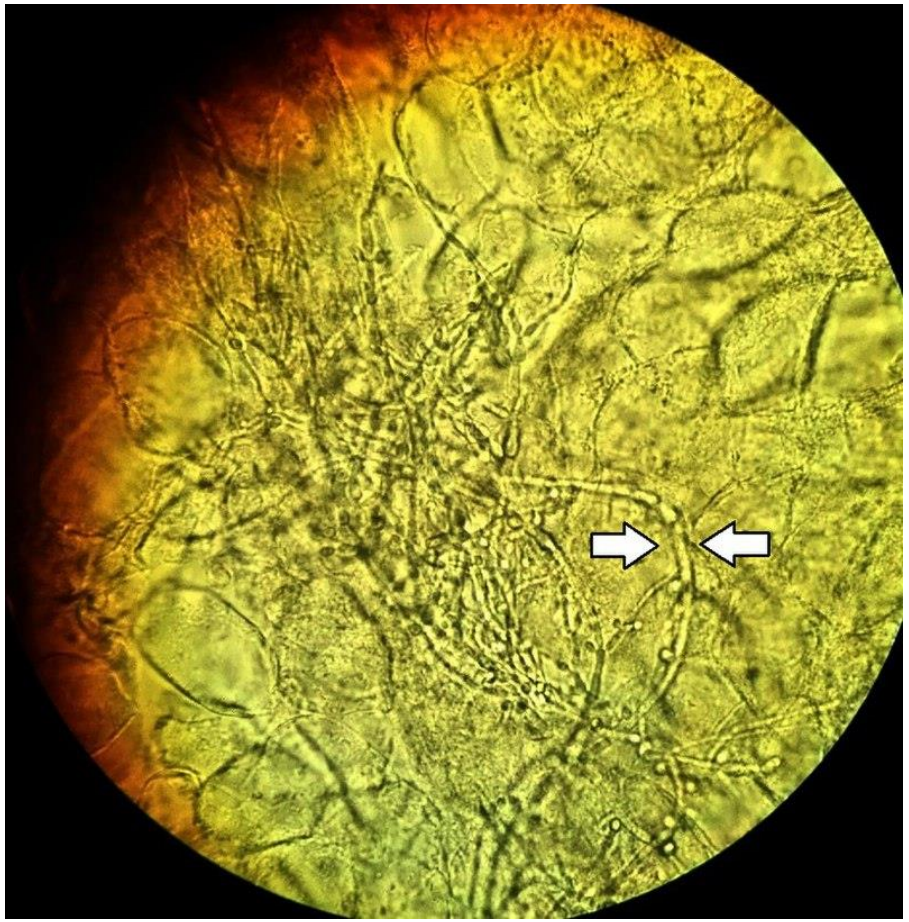
Vulvovaginal candidiasis Symptoms & Signs

- Symtoms
- Vaginal discharge which can vary from watery to homogenously thick that typically resembles cottage cheese.
- Vulvar pruritis, vaginal soreness, dyspareunia, vulvar burning and irritation may be present.
- External dysuria (splash dysuria) may occur.
- Examination reveals
- erythema & edema of the vulvar skin and labia.
- The vagina may be erythematous with an adherent, whitish discharge.
- The cervix appears normal

Diagnosis of Vulvovaginal candidiasis

- Normal vaginal pH value (<4.5)
- The Whiff test is negative.
- Fungal elements (mycelia or budding yeast) appear in 80% of cases.
- Fungal culture is needed if microscopic examination of vaginal secretions in a potassium hydroxide preparation is negative but clinical suspicion is high or when a patient has persistent or recurrent symptoms despite treatment.

Vaginal wet mount showing slings of pseudohyphae of *Candida albicans* surrounded by round vaginal epithelial cells



Treatment of Vulvovaginal candidiasis

- Candida vaginitis is usually treated by the vaginal administration of imidazole or triazole antifungal drugs, or oral fluconazole.

- Known etiologies of recurrent vulvovaginal candidiasis include:
- Treatment-resistant Candida species other than *Candida albicans*
- Frequent antibiotic therapy
- Contraceptive use
- Compromise of the immune system
- Sexual activity
- Hyperglycemia and Diabetes

Trichomoniasis

- Trichomoniasis is the third most common cause of vaginitis.
- Trichomoniasis is the most common non-viral sexually transmitted infection worldwide, especially among those with multiple sexual partners. Which is most often spread through vaginal, oral, or anal sex.
- The causative organism is the flagellated protozoan Trichomonas vaginalis. It exists in trophozoite form.

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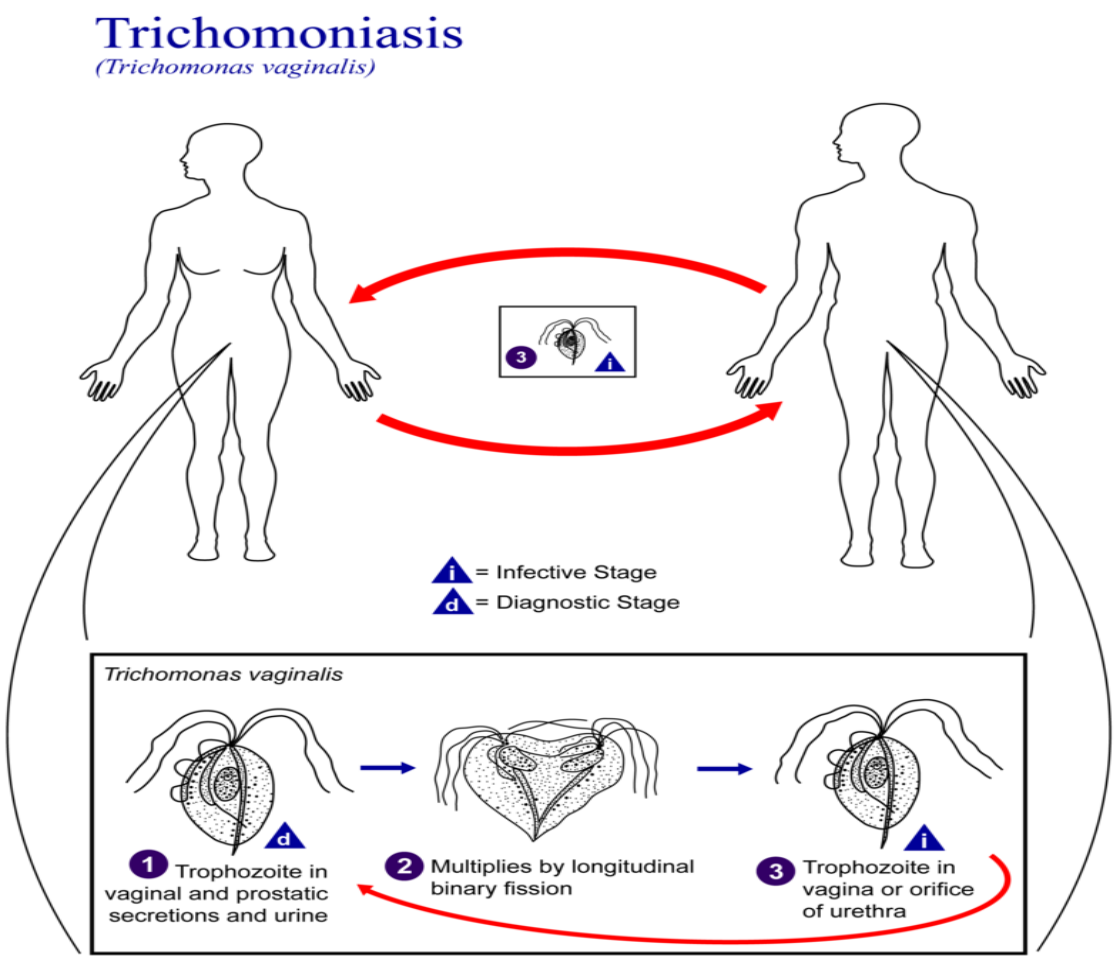
Trichomoniasis



SYMPTOMS

- Asymptomatic in (20-50%)
- Patients with trichomoniasis usually have nonspecific symptoms, including increased vaginal discharge, irritation, and itching and dysuria.
- The vaginal discharge (profuse, extremely frothy, greenish, foul smelling)
- Patchy redness of the genitals, including labia and vagina with *Strawberry cervix* may be observed.
- It often accompanies BV, which can be diagnosed in as many as 60% of patients with Trichomonas vaginitis
- *Trichomonas vaginalis*, can also infect the prostate and urethra in men

Recurrent Trichomoniasis

- About 20% of people get infected again within three months of treatment

- Because trichomoniasis is sexually transmitted with high recurrence rate, the Centers for Disease Control (CDC) recommends re-infection testing 3 months after treatment.

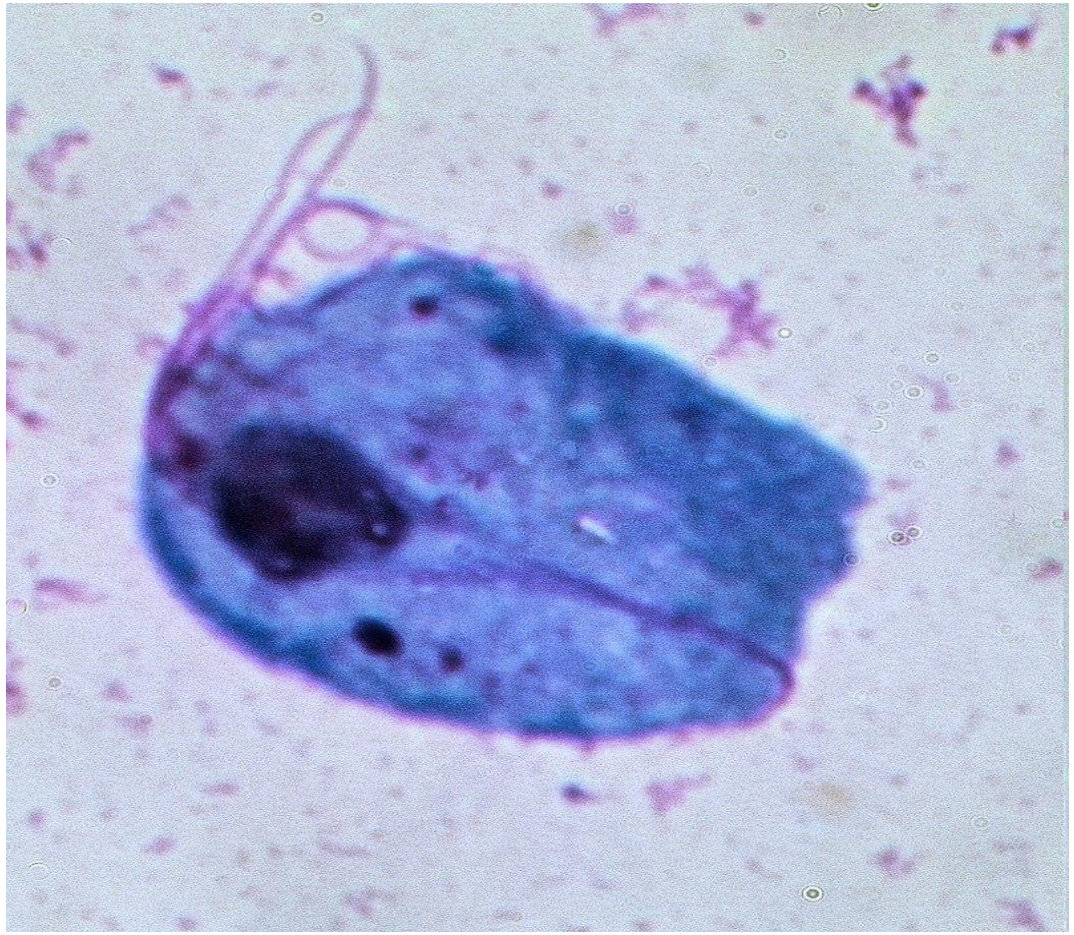
Trichomoniasis Diagnosis

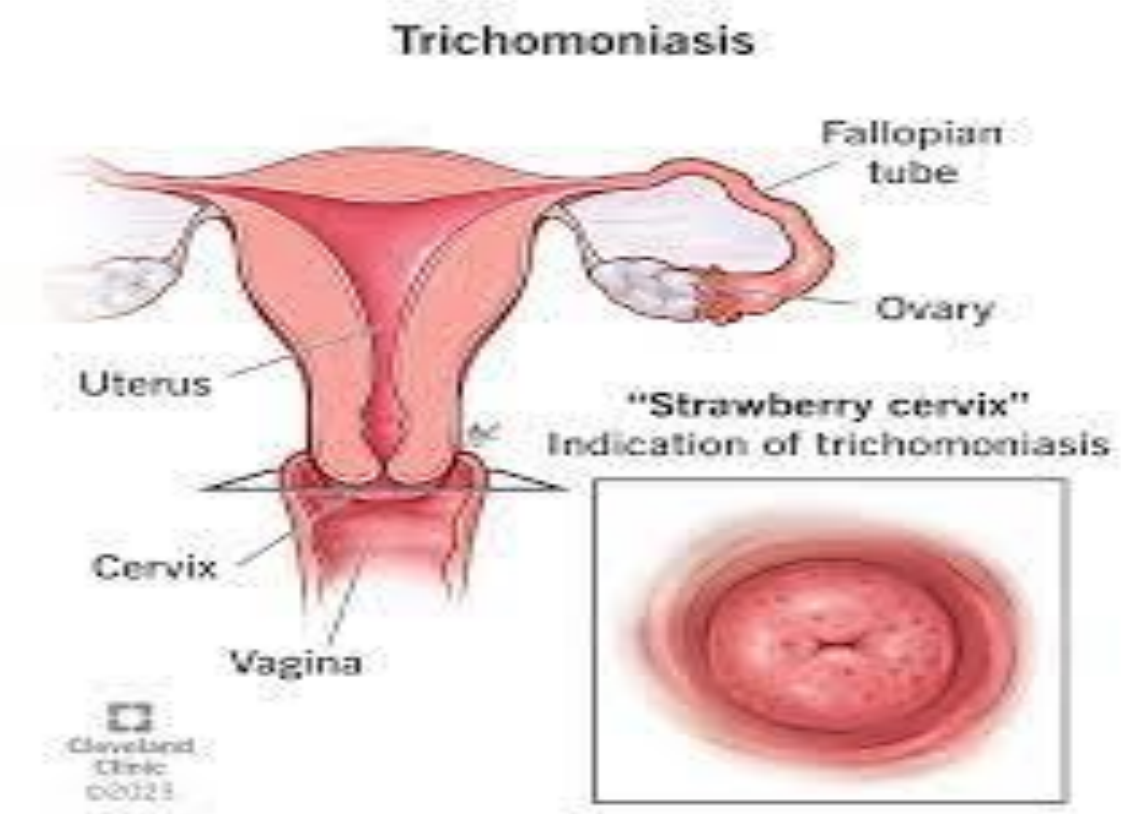
- Saline microscopy
- Culture
- *Trichomonas vaginalis* culture tests are relatively cheap; however, sensitivity is still somewhat low (70–89%).
- It is the most sensitive and specific commercially available method of diagnosis

- The Nucleic Acid Amplification Tests (NAATs) which are more sensitive. These tests are more costly than microscopy and culture, and are highly sensitive (80–90%).

- The PH of the vaginal secretions is usually >5.

Trichomoniasis





Treatment of Trichomoniasis

- In the United States, only metronidazole and tinidazole have been authorized by the U.S. Food and Drug Administration (FDA) and are available for the treatment of trichomoniasis.

- In 90% of all cases, a single oral or long-term administration of nitroimidazole drugs can cure this parasitic disease.

- Husband should also be treated.

Treatment of Trichomoniasis

- Pregnant women with TV are at increased risk of premature rupture of the membranes and preterm delivery.
- Women should be tested for other STDs, mainly N. gonorrhea and chlamydia trachomatis.
- Serologic testing for syphilis and HIV infection should also be considered.

Genital warts (Condyloma Acuminata)

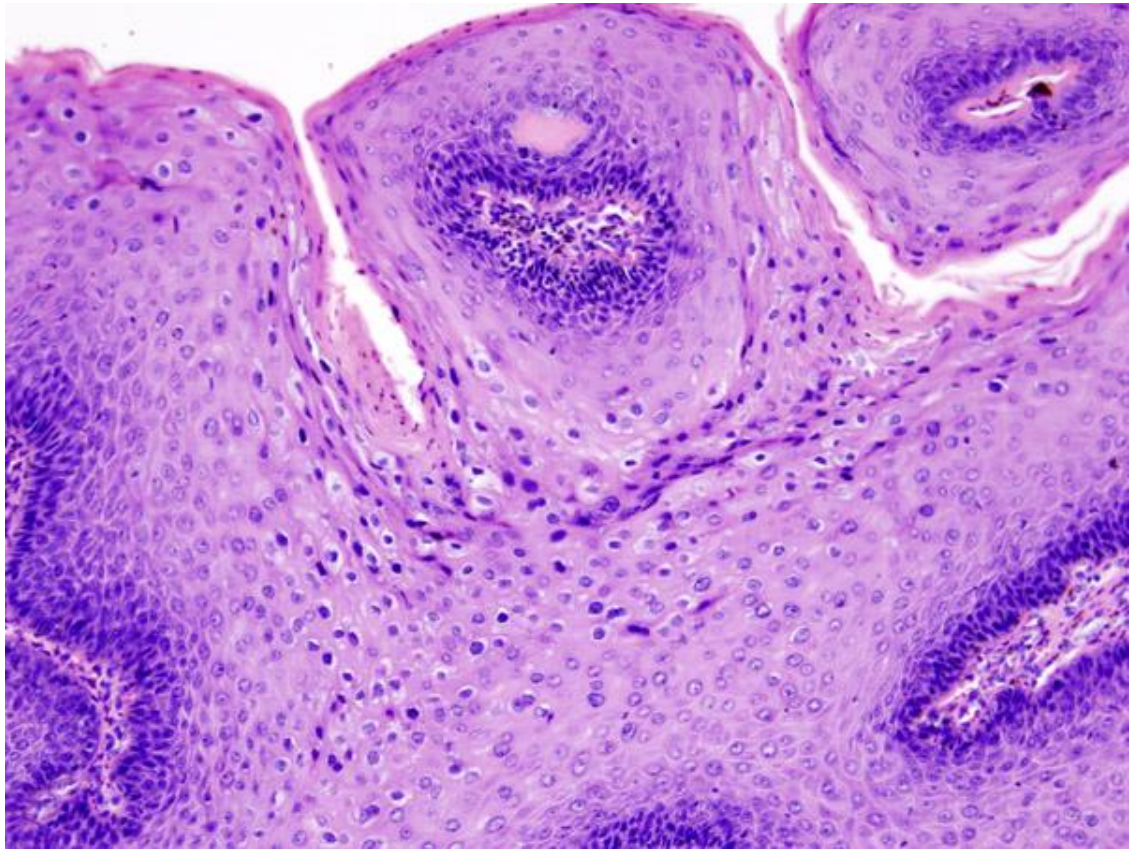
- HPV types 6 and 11 are responsible for causing majority of genital warts whereas HPV types 16, 18, 31, 33, and 35 are also occasionally found.
- It is spread through direct skin-to-skin contact, usually during oral, vaginal, or anal sex with an infected partner. Highly contagious >75%.
- In most cases, there are no symptoms of HPV infection other than the warts themselves. Sometimes warts may cause itching, redness, or discomfort.
- Although 90% of HPV infections are cleared by the body within two years of infection, it is possible for infected cells to undergo a latency (quiet) period, with the first occurrence or a recurrence of symptoms happening months or years late.

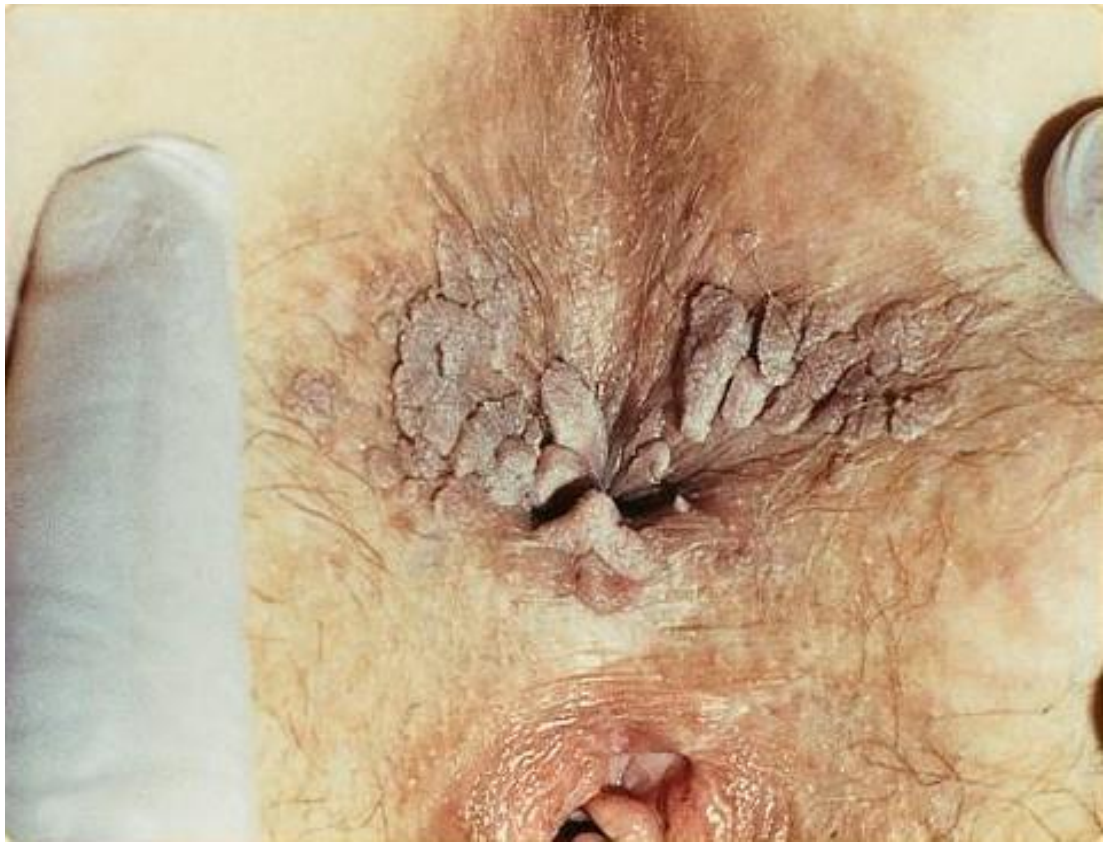
Diagnosis of Genital Warts

- In pregnancy they may proliferate and become easily irritated due to the increased vascularity and altered immunity.

- The diagnosis of genital warts is most often made visually (clinical diagnosis), but may require confirmation by biopsy in some cases.

Genital warts are small, rough lumps that can appear around the vagina, penis or anus





Treatment of genital warts

- Treatment for genital warts is not always needed. They sometimes disappear on their own within 6 months (1/3 of cases).
- The type of treatment which will be offered depends on what the warts look like and where they are???
- It may take weeks or months for genital wart treatment to work and the warts may come back.
- Sometimes the treatment does not work
- There is no cure for HPV.
- Existing treatments are directed towards the removal of visible warts.

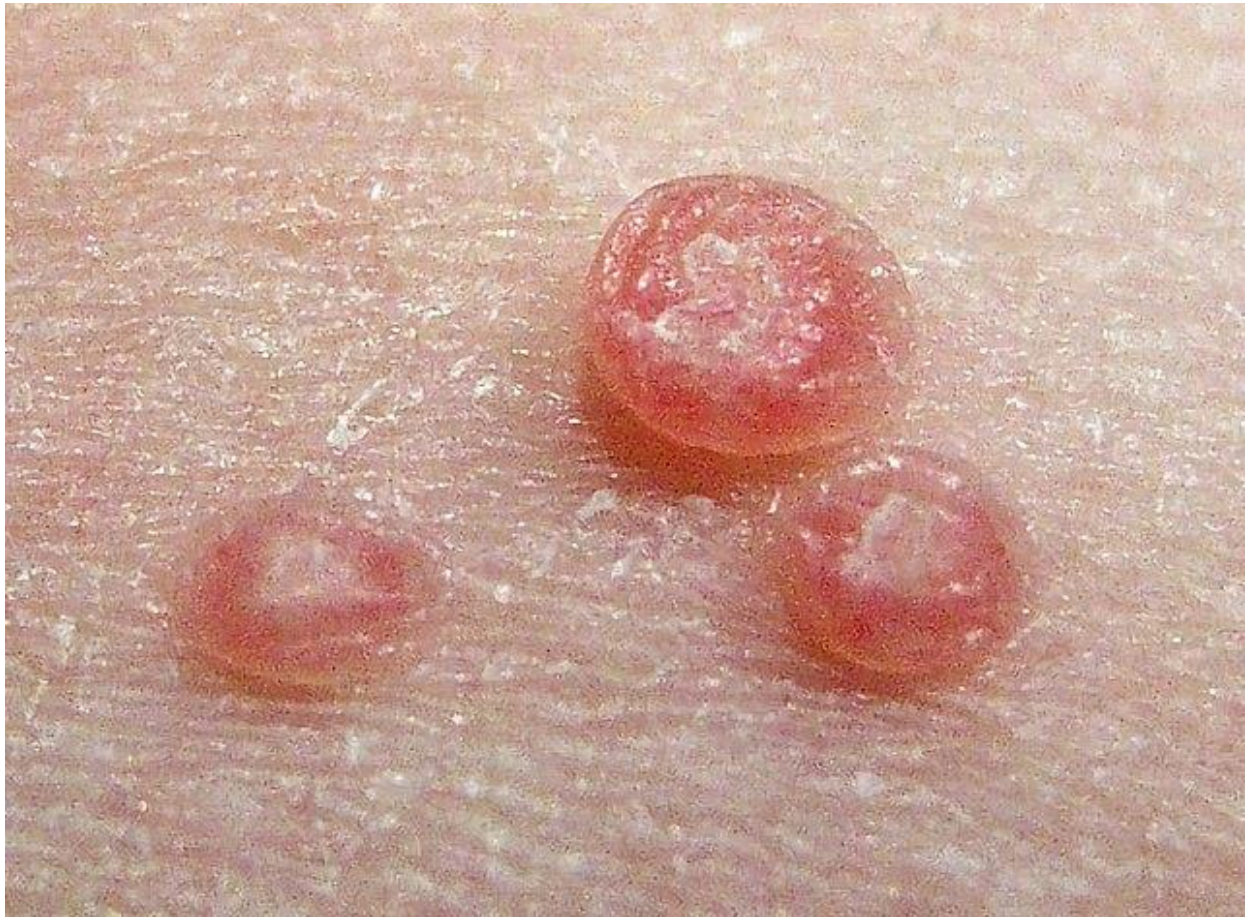
Treatment of genital warts

- The treatment methods described in the literature were laser therapy, cryotherapy, imiquimod, photodynamic therapy, trichloroacetic acid, and local hyperthermia.
- The goal of the treatment is the removal of the warts, it is not possible to eradicate the viral infection
- In the offspring of pregnant women with condyloma acuminata, juvenile-onset recurrent respiratory papillomatosis (JORRP) may develop by mother-to-child transmission.
- prevention of mother-to-child transmission in pregnant women with condyloma acuminata is an important management point. However, no clear guidelines are available.

MOLLUSCUM CONTAGIOSUM

- Caused by POX virus infection.
- Spread by skin contact , autoinoculation, fomites.
- It's characterised by small, smooth, round, pearly lumps with a central core
- Usually asymptomatic but may be pruritic & become inflamed & swollen .
- It is usually self limited.

MOLLUSCUM CONTAGIOSUM



Genital ulcers

- Genital herpes (Most common cause)
- Chancre (syphilis)
- Chancroid
- Granuloma inguinale
- Lymphogranuloma venereum

Genital herpes

- Primary or first-episode HSV genital infections in pregnant and nonpregnant women are commonly asymptomatic
- If symptomatic: vesicular lesions appear in cluster, painful ulcers, swollen lymph nodes. Flu-like symptoms such as fever, aching may also occur.
- The disease is typically spread by direct genital contact with the skin surface or secretions of someone who is infected.
- The causative organism could be HSV-1 or HSV-2
- Women are more commonly infected than men
- Diagnosis may occur by testing lesions using either PCR or viral culture or blood tests for specific antibodies.
- Antiviral medications (e.g Acylovir 400 mg orally 3 times per day for 7–10 days) provide clinical benefits to those who are symptomatic and is the primary means of management once infected.

Risk of neonatal transmission during childbirth

- Women who acquire primary or first-episode genital herpes during pregnancy are at greater risk for transmitting the infection than are women with recurrent genital herpes.
- Working with pregnant women to prevent mother-to-child transmission of HSV is an important component in reducing the overall disease burden of neonatal HSV infections.
- In women with active recurrent genital HSV lesions, antiviral suppressive therapy with oral acyclovir or valacyclovir can be started at 36 weeks of gestation.
- Another prevention strategy recommended by ACOG is that cesarean delivery should be performed in women with active genital lesions (whether primary or recurrent) or with prodromal symptoms that may indicate an impending genital outbreak.

CERVICITIS

- **The ectocervix with its squamous epithelium can be infected by the same microorganisms that are responsible for vaginitis.

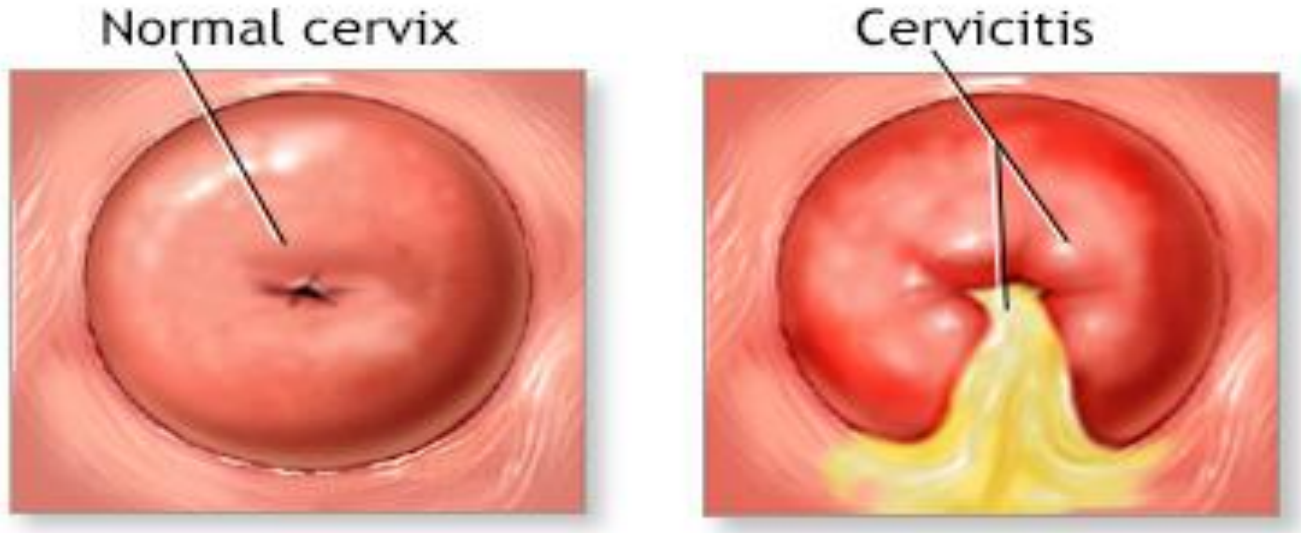
- ** The glandular epithelium can only be infected by N.gonorrhea & C.trachomatis

CERVICITIS

- **Cases of cervicitis may be mild or severe, acute or chronic.**
- **Cervicitis is often caused by a sexually transmitted infection (STI), such a chlamydia, Gonorrhea, trichomoniasis, genital herpes, mycoplasma and ureaplasma.**
- **Possible symptoms of cervicitis including intermenstrual bleeding, pain with intercourse or during a pelvic exam and abnormal vaginal discharge.**
- **The diagnosis of cervicitis is based on the finding of a purulent endocervical discharge, generally yellow or green in color (mucopus).**

CERVICITIS

Cervicitis symptoms include a red and inflamed cervix with an unusual discharge



Gonorrhea

- Caused by: N. gonorrhoeae
- 50% asymptomatic
- Present with vaginal discharge, dysuria, abnormal uterine bleeding.

- Diagnosed by culture (Thayer Martin) & (NAAT)
- Treat by: Cefixime 400mg single dose orally
  Ceftriaxone 250mg IM single dose

Chlamydia

- Caused by : C. trachomatis
- 75% cases asymptomatic
- Commonly present with abnormal vaginal discharge, burning with urination, spotting, postcoital bleeding.

- Diagnosed by NAAT(Nucleic Acid Amplification Testing).
- Treat by: Azithromycin 1gm orally (single dose)
  Doxycycline 100 mg orally twice daily for 7 days