Vaginitis

Vaginitis

- Bacterial Vaginosis (BV)
- Vulvovaginal Candidiasis (VVC)
- Trichomoniasis

Vaginal Environment

- The vagina is a dynamic ecosystem that contains approximately 10^9 bacterial colony-forming units.
- Normal vaginal discharge is clear to white, odorless, and of high viscosity.
- Normal bacterial flora is dominated by lactobacilli – other potential pathogens present.
- Lactic acid helps to maintain a normal vaginal pH of 3.8 to 4.2.
- Acidic environment and other host immune factors inhibits the overgrowth of bacteria.
- Some lactobacilli also produce H_2O_2, a potent microbicide.

Vaginitis

- Usually characterized by:
  - Vaginal discharge
  - Vulvar itching
  - Irritation
  - Odor
- Common types
  - Bacterial vaginosis (40%-45%)
  - Vulvovaginal candidiasis (20%-25%)
  - Trichomoniasis (15%-20%)

Other Causes of Vaginitis

- Normal physiologic variation
- Allergic reactions
- Herpes simplex virus
- Atrophic vaginitis
- Foreign bodies

Diagnosis of Vaginitis

- Patient history
- Visual inspection of internal/external genitalia
- Appearance of discharge
- Collection of specimen
- Preparation and examination of specimen slide

Other Diagnostic Aids for Vaginitis

- Culture
- DNA probe
- Rapid test

Vaginitis Differentiation

	Normal	Bacterial Vaginosis	Candidiasis	Trichomoniasis
Symptom presentation		**Odor, discharge, itch**	**Itch, discomfort, dysuria, thick discharge**	**Itch, discharge, 50% asymptomatic**
Vaginal discharge	**Clear to white**	**Homogenous, adherent, thin, milky white; malodorous "foul fishy"**	**Thick, clumpy, white "cottage cheese"**	**Frothy, gray or yellow-green; malodorous**
Clinical findings			**Inflammation and erythema**	**Cervical petechiae "strawberry cervix"**
Vaginal pH	**3.8 - 4.2**	**> 4.5**	**Usually ≤ 4.5**	**> 4.5**

Vaginitis

Bacterial Vaginosis (BV)

Etiology

- Linked to :
  - premature rupture of membranes,
  - premature delivery and low birth-weight delivery,
  - acquisition of HIV,
  - post-operative infections after gynecological procedures

Risk Factors

- African Americans
- Two or more sex partners in previous six months/new sex partner
- Douching
- Lack of barrier protection
- Absence of or decrease in lactobacilli
- Lack of H_2O_2-producing lactobacilli

Transmission

- Currently not considered a sexually transmitted disease, but acquisition appears to be related to sexual activity

Microbiology

- Overgrowth of bacteria species normally present in vagina with anaerobic bacteria
- BV correlates with a decrease or loss of protective lactobacilli:
  - Vaginal acid pH normally maintained by lactobacilli through metabolism of glycogen
  - Hydrogen peroxide (H_2O_2) is produced by some *Lactobacilli*,sp.
  - H_2O_2 helps maintain a low pH, which inhibits bacteria overgrowth
  - Loss of protective lactobacilli may lead to BV

H_2O_2 -Producing Lactobacilli

- All lactobacilli produce lactic acid
- Some species also produce H_2O_2
- H_2O_2 is a potent natural microbicide
- Present in 42%-74% of females
- In vitro, H_2O_2 is toxic to viruses such as HIV as well as bacteria

Clinical Presentation and Symptoms

- Most women are asymptomatic
- Signs/symptoms when present:
  - Reported malodorous (fishy smelling) vaginal discharge
  - Reported more commonly after vaginal intercourse and after completion of menses
- Symptoms may remit spontaneously

Treatment

CDC-recommended regimens:

- Metronidazole 500 mg orally twice a day for 7 days, OR
- Metronidazole gel 0.75%, one full applicator (5 grams) intravaginally, once a day for 5 days, OR
- Clindamycin cream 2%, one full applicator (5 grams) intravaginally at bedtime for 7 days

Alternative regimens:

- Clindamycin 300 mg orally twice a day for 7 days, OR
- Clindamycin ovules 100 g intravaginally once at bedtime for 3 days

Multiple recurrences:

- Twice weekly metronidazole gel for 6 months may reduce recurrences

Treatment in Pregnancy

- Pregnant women with symptomatic disease should be treated with
  - Metronidazole 500 mg twice a day for 7 days, OR
  - Metronidazole 250 mg orally 3 times a day for 7 days, OR
  - Clindamycin 300 mg orally twice a day for 7 days

Screening and Treatment in Asymptomatic Patients

- Therapy is not recommended for male partners of women with BV
- Female partners of women with BV should be examined and treated if BV is present
- Screen and treat women prior to surgical abortion or hysterectomy

Recurrence

- Recurrence rate is 20-40% 1 month after therapy
- Recurrence may be a result of persistence of BV-associated organisms and failure of lactobacillus flora to recolonize
- Data do not support yogurt therapy or exogenous oral lactobacillus treatment
- Vaginal suppositories containing human lactobacillus strains
- Twice weekly metronidazole gel for 6 months may reduce recurrences

Patient Counseling and Education

- **Nature of the Disease**
  - Normal vs. abnormal discharge, malodor, BV signs and symptoms
- **Transmission Issues**
  - Association with sexual activity, high concordance in female same-sex partnerships
- **Risk Reduction**
  - Correct and consistent condom use
  - Avoid douching

Vaginitis

Vulvovaginal Candidiasis (VVC)

VVC Epidemiology

- Affects most females during lifetime
- Most cases caused by *C. albicans* (85%-90%)
- Second most common cause of vaginitis
- Estimated cost: $1 billion annually in the U.S.

Transmission

- Candida species are normal flora of skin and vagina and are not considered to be sexually transmitted pathogens

Microbiology

- Candida species are normal flora of the skin and vagina
- VVC is caused by overgrowth of *C. albicans* and other non-albicans species
- Symptomatic clinical infection occurs with excessive growth of yeast
- Disruption of normal vaginal ecology or host immunity can predispose to vaginal yeast infections

Clinical Presentation and Symptoms

- Vulvar pruritis is most common symptom
- Thick, white, curdy vaginal discharge ("cottage cheese-like")
- Erythema, irritation, occasional erythematous
- External dysuria and dyspareunia

Diagnosis

- History, signs and symptoms
- Visualization of pseudohyphae (mycelia) and/or budding yeast (conidia) on KOH or saline wet prep
- pH normal (4.0 to 4.5)
  - If pH > 4.5, consider concurrent BV or trichomoniasis infection
- Cultures not useful for routine diagnosis

Classification of VVC

Uncomplicated VVC

– Sporadic or infrequent vulvovaginal candidiasis

Or

– Mild-to-moderate vulvovaginal candidiasis

Or

– Likely to be *C. albicans*

Or

– Non-immunocompromised women

Complicated VVC

– Recurrent vulvovaginal candidiasis (RVVC)

Or

– Severe vulvovaginal candidiasis

Or

– Non-albicans candidiasis

Or

– Women with uncontrolled diabetes, debilitation, or immunosuppression or those who are pregnant

Uncomplicated VVC

- Mild to moderate signs and symptoms
- Non-recurrent
- 75% of women have at least one episode
- Responds to short course regimen

CDC-Recommended Treatment Regimens

- **Intravaginal agents:**
  - Butoconazole 2% cream, 5 g intravaginally for 3 days†
  - Butoconazole 2% sustained release cream, 5 g single intravaginally application
  - Clotrimazole 1% cream 5 g intravaginally for 7-14 days†
  - Clotrimazole 100 mg vaginal tablet for 7 days
  - Clotrimazole 100 mg vaginal tablet, 2 tablets for 3 days
  - Miconazole 2% cream 5 g intravaginally for 7 days†
  - Miconazole 100 mg vaginal suppository, 1 suppository for 7 days†
  - Miconazole 200 mg vaginal suppository, 1 suppository for 3 days†
  - Miconazole 1,200 mg vaginal suppository, one suppository for 1 day
  - Nystatin 100,000-unit vaginal tablet, 1 tablet for 14 days †
  - Tioconazole 6.5% ointment 5 g intravaginally in a single application†
  - Terconazole 0.4% cream 5 g intravaginally for 7 days
  - Terconazole 0.8% cream 5 g intravaginally for 3 days
  - Terconazole 80 mg vaginal suppository, 1 suppository for 3 days
- **Oral agent:**
  - Fluconazole 150 mg oral tablet, 1 tablet in a single dose

Note: The creams and suppositories in these regimen are oil-based and may weaken latex condoms and diaphragms. Refer to condom product labeling for further information.
† Over-the-counter (OTC) preparations.

Complicated VVC

- Recurrent (RVVC)
  - Four or more episodes in one year
- Severe
  - Edema
  - Excoriation/fissure formation
- Non-albicans candidiasis
- Compromised host
- Pregnancy

Complicated VVC Treatment

- Recurrent VVC (RVVC)
  - 7-14 days of topical therapy, or
  - 100mg,150 mg , or 200mg oral dose of fluconozole repeated 3 days later

- Severe VVC
  - 7-14 days of topical therapy, or
  - 150 mg oral dose of fluconozole repeated in 72 hours

Complicated VVC Treatment (continued)

- Non-albicans
  - Optimal treatment unknown
  - 7-14 days non-fluconozole therapy
  - 600 mg boric acid in gelatin capsule vaginally once a day for 14 days for recurrences
- Compromised host
  - 7-14 days of topical therapy
- Pregnancy
  - Fluconazole is contraindicated
  - 7-day topical agents are recommended

Partner Management

- VVC is not usually acquired through sexual intercourse.
- Treatment of sex partners is not recommended but may be considered in women who have recurrent infection.
- A minority of male sex partners may have balanitis and may benefit from treatment with topical antifungal agents to relieve symptoms.

Patient Counseling and Education

- Nature of the disease
  - Normal vs. abnormal vaginal discharge, signs and symptoms of candidiasis, maintain normal vaginal flora
- Transmission Issues
  - Not sexually transmitted
- Risk reduction
  - Avoid douching, avoid unnecessary antibiotic use, complete course of treatment

Vaginitis

Trichomonas vaginalis

Incidence and Prevalence

- Most common treatable STD
- Estimated 3-5 million cases annually in the U.S. at a medical cost of $375 million
- Estimated prevalence:
  - 3% in the general female population

Risk Factors

- Multiple sexual partners
- Lower socioeconomic status
- History of STDs
- Lack of condom use

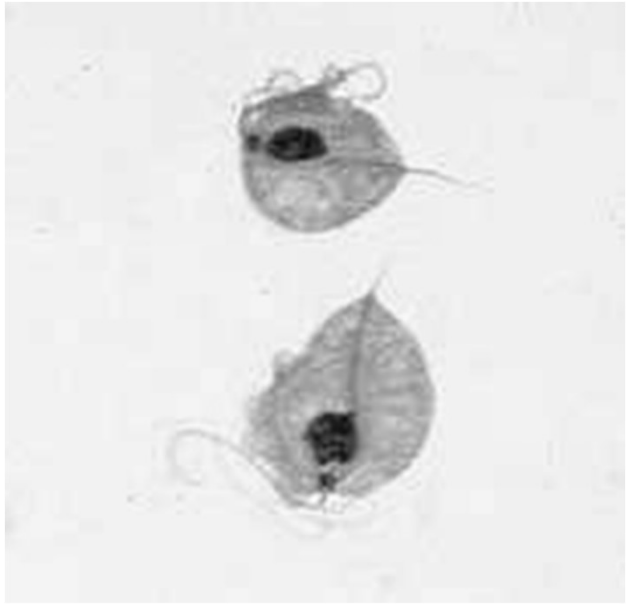
Transmission

- Almost always sexually transmitted
- Females and males may be asymptomatic
- Transmission between female sex partners has been documented

Microbiology

- Etiologic agent
  - *Trichomonas vaginalis* - flagellated anaerobic protozoa
  - Only protozoan that infects the genital tract
- Associations with
  - Pre-term rupture of membranes and pre-term delivery
  - Increased risk of HIV acquisition

Trichomonas vaginalis



Source: CDC, National Center for Infectious Diseases, Division of Parasitic Diseases

Clinical Presentation and Symptoms in Women

- May be asymptomatic in women
- Vaginitis
  - Frothy gray or yellow-green vaginal discharge
  - Pruritus
  - Cervical petechiae ("strawberry cervix") - classic presentation, occurs in ≤2% of cases
- May also infect Skene's glands and urethra, where the organisms may not be susceptible to topical therapy

T. vaginalis in Men

- May cause up to 11%-13% of nongonococcal urethritis in males
- Urethral trichomoniasis has been associated with increased shedding of HIV in HIV-infected men

Diagnosis- Females

- **Motile** trichomonads seen on saline wet mount
- Vaginal pH >4.5 often present
- Culture is the “gold standard”
- Pap smear has limited sensitivity and low specificity
- DNA probe
- Rapid test

Diagnosis- Males

- First void urine concentrated
  - Examine for motile trichomonads
  - Culture
- Urethral swab
  - Culture

Treatment

- CDC-recommended regimen
  - Metronidazole 2 g orally in a single dose OR
  - Tinidazole 2 g orally in a single dose
- CDC-recommended alternative regimen
  - Metronidazole 500 mg twice a day for 7 days

Pregnancy

- CDC-recommended regimen
  - Metronidazole 2 g orally in a single dose
- No consistent association between metronidazole use in pregnancy and teratogenic effects

Treatment Failure

- A common reason for treatment failure is reinfection: assure treatment of sex partners.
- If treatment failure occurs with metronidazole 2 g orally in a single dose for all partners, can treat with metronidazole 500 mg orally twice daily for 7 days or tinidazole 2 g orally single dose
- If treatment failure of either of these regimens, consider retreatment with tinidazole or metronidazole 2 g orally once a day for 5 days

Partner Management

- Sex partners should be treated

- Patients should be instructed to avoid sex until they and their sex partners are cured (when therapy has been completed and patient and partner(s) are asymptomatic)

Risk Reduction

The clinician should:

- Assess patient's potential for behavior change
- Discuss individualized risk-reduction plans with the patient
- Discuss prevention strategies such as abstinence, monogamy, use of condoms, and limiting the number of sex partners
- Latex condoms, when used consistently and correctly, can reduce the risk of transmission of *T. vaginalis*