Sexually Transmitted Diseases (STDs) / Infections (STIs) – Part III

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Vaginitis – Causes & Differentiation

Vaginitis is a common clinical problem characterized by vaginal discharge.

Three main causes include:

- Bacterial Vaginosis (BV) – *Gardnerella vaginalis* + mixed anaerobes → 45–50% cases
- Vulvovaginal Candidiasis (VVC) – *Candida albicans* → 20–25% cases
- Trichomoniasis – *Trichomonas vaginalis* → 15–20% cases

Bacterial Vaginosis (BV)

📌 Definition

- A condition due to shift in vaginal flora:
    - ↓ Lactobacillus (protective, maintains acidic pH)
    - ↑ Anaerobes: *Prevotella sp., Mobiluncus sp., Gardnerella vaginalis, Mycoplasma hominis*

✵ Clinical Features

- 50% are asymptomatic
- Thin, grey/white, malodorous ("fishy") discharge
- Itching & inflammation uncommon

🔎 Diagnosis of BV

1. Clinical: Amsel's Criteria (need ≥3/4)

- Thin, grey-white, homogenous malodorous discharge
- Clue cells on microscopy (epithelial cells studded with bacteria; *most reliable*)
- Vaginal fluid pH > 4.5
- Positive Whiff Test (fishy odor after adding 10% KOH – "amine test")

2. Laboratory: Nugent Score (Gram stain)

- Scoring system (0–10) based on bacterial morphotypes
    - 0–3 → Normal
    - 4–6 → Intermediate
    - 7–10 → BV

💊 Treatment

- Metronidazole or Clindamycin (oral or vaginal) are effective.

Vulvovaginal Candidiasis (VC)

📌 Etiology

- 85–90% cases by Candida albicans

- Normal vaginal flora → disease occurs when overgrowth (not considered STI).

✳️ Clinical Features

- Intense vulvar pruritus
- Thick, white curdy ("cottage cheese-like") discharge
- Vulvar erythema, irritation, satellite lesions
- Dysuria, dyspareunia

Diagnosis

- KOH wet prep → budding yeast or pseudohyphae
- Gram stain → Gram-positive budding yeast
- Culture → Sabouraud's agar

Treatment

- Topical azoles (clotrimazole, miconazole) OR
- Oral fluconazole single dose

Trichomoniasis

📌 Etiology

- *Trichomonas vaginalis* → flagellated protozoan parasite
- Lives in genitourinary tract of both sexes
- Transmission: sexually + during delivery
- Epidemiology: ~5 million new cases/year

🌟 Clinical Features

- Range: asymptomatic → severe acute vaginitis
- Purulent, thin, frothy, malodorous discharge
- Dysuria, dyspareunia, pruritus
- "Strawberry cervix"  = punctate hemorrhages on cervix.

🔎 Diagnosis

- Wet mount (saline) → motile trichomonads (70–80% sensitivity)

- pH > 4.5
- PAP smear, immunofluorescence, ICT, culture, PCR

💊 Treatment

- Metronidazole (single dose or 7-day regimen) – partner treatment essential 👫

📊 Differentiation of Vaginitis

Feature	Normal	Trichomoniasis	Candidiasis	Bacterial Vaginosis
Symptoms	Clear/white discharge	Frothy, malodorous discharge; pruritus	Thick, clumpy "cottage cheese" discharge; pruritus	Malodorous "fishy" discharge; often asymptomatic
Clinical Findings	None	Cervical petechiae "strawberry cervix"	Erythema, satellite lesions	Clue cells
Vaginal pH	3.8–4.2	> 4.5	Usually < 4.5	> 4.5
Whiff test	Negative	Often positive	Negative	Positive

(KOH)

Wet mount	Lactobacilli	Motile flagellated protozoa	Pseudohyphae/ spores	Clue cells (>20%), few/no WBCs

🔄 Flowchart: Vaginitis Diagnosis (Simplified)

Vaginal Discharge

↓

Check pH & Smell

↓

pH > 4.5 + Fishy odor → Bacterial Vaginosis 

pH > 4.5 + Frothy discharge + Strawberry cervix → Trichomoniasis 

pH < 4.5 + Thick curdy discharge + Itching → Candidiasis 

🎯 Exam Points

- BV: Gardnerella + anaerobes → pH > 4.5 → clue cells → metronidazole

- VVC: Candida albicans → pruritus + curdy discharge → budding yeast → fluconazole
- Trichomoniasis: Trichomonas vaginalis → frothy malodorous discharge + strawberry cervix → motile trichomonads → metronidazole

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Human Immunodeficiency Virus (HIV)

📌 Overview

- Virus that causes AIDS.
- HIV-1 → more virulent, worldwide epidemic 🌍
- HIV-2 → primarily in West Africa, less transmissible

🔁 Routes of Transmission

- Sexual contact (heterosexual, homosexual)
- Blood & blood products 💉

- Contaminated needles (IV drug use, unsafe injections)
- Vertical (mother → child, during pregnancy, delivery, breastfeeding) 👶
- Organ transplantation

Infective body fluids: Blood, semen, vaginal secretions, breast milk 🍼

⚡ Pathogenesis

- HIV causes progressive impairment of cellular immunity.
- ↓ CD4+ T lymphocytes → increased risk of:
    - Opportunistic infections
    - Malignancies (e.g., Kaposi sarcoma, NHL)
    - Neurological diseases
- AIDS defined when CD4 <200/mm³ 📉

🔎 Diagnosis of HIV

1. Antibody Tests

- ELISA → screening (risk: false positives)
- Western Blot → confirmatory (detects HIV proteins)
- 4th generation ELISA → detects both HIV antibodies + p24 antigen

2. Molecular Tests

- HIV PCR or Branched chain amplification (high sensitivity/specificity, costly)
- Qualitative → presence of virus
- Quantitative (viral load) → monitor disease progression & treatment

3. Other

- Virus culture (rarely done)
- CD4 counts (monitor immune status)
- Line immunoassay → easy, latest technique

PELVIC INFLAMMATORY DISEASE (PID)

📌 Definition

- Ascending infection from vulva/vagina → upper genital tract.

- Often follows procedures opening cervix (D&C, abortion, miscarriage, IUD insertion).

- Involves:

    - Endometritis
    - Salpingitis
    - Cervicitis (mucopurulent)
    - Oophoritis

- Polymicrobial: aerobic + anaerobic organisms.

🔬 Causative Agents

- Major: Neisseria gonorrhoeae, Chlamydia trachomatis

- Others:

    - Enteric G- rods (*E. coli*)
    - Peptococcus
    - *Streptococcus agalactiae*
    - *Clostridium perfringens*

- *Bacteroides fragilis*
- *Mycoplasma hominis*
- *Gardnerella vaginalis*
- *Actinomyces israelii* (esp. IUD users)
- *Haemophilus ducreyi*
- *Mycobacterium tuberculosis*

Symptoms

- Lower abdominal pain
- Abnormal vaginal discharge
- Abnormal uterine bleeding
- Dysuria, dyspareunia
- Nausea, vomiting, fever

Complications

- Infertility → 15–24% after 1 episode (esp. GC/chlamydia)
- ↑ Risk of ectopic pregnancy (7×)

- Chronic pelvic pain (18%)

🔎 Diagnosis

- Clinical: lower abdominal/adnexal tenderness, cervical motion pain, mucopurulent discharge, fever >38.3°C
- Lab: ↑ ESR/CRP, CBC, GC & Chlamydia DNA probes/cultures, HIV/hepatitis tests
- Imaging: Transvaginal US, CT
- Procedures: Endometrial biopsy, Laparoscopy (gold standard)

Genital Warts (HPV Infection)

📌 Overview

- Caused by Human Papillomavirus (HPV).
- Appears 3–8 weeks post-infection.
    - 100 types identified.

🔬 Types

- Low-risk (warts): HPV 6, 11, 42, 44
- High-risk (cancer): HPV 16, 18, 31, 33 → strong link with cervical cancer.

🌟 Clinical Features

- Many asymptomatic.
- Warts: vulva, cervix, penis, scrotum, anus, urethra.
- May cause itching, burning, pain, bleeding during sex.
- Appearance: cauliflower-like growths; may be flat or hidden (vagina, cervix, rectum, throat).

💉 HPV Vaccine

- Gardasil → protects against common wart- & cancer-causing HPV types.
- Recommended for adolescents before sexual debut.

🔎 Diagnosis

- Genital warts: clinical (no specific test).
- Cervical lesions/cancer:
    - Regular Pap smear (screening tool).
    - HPV DNA detection → confirms infection.

Giardiasis

📌 Etiology

- Caused by Giardia lamblia (flagellated protozoan).
- Infects duodenum & small intestine.
- Transmission: fecal–oral, contaminated water 💧, or sexual (esp. homosexual contacts).

✳️ Clinical Features

- Range: asymptomatic → acute/chronic diarrhea.
- Malabsorption (steatorrhea, weight loss).

🔎 Diagnosis

- Stool microscopy → trophozoites/cysts (3 samples needed → >90% sensitivity).
- Stool EIA or DFA → more sensitive.
- Duodenal aspirate/biopsy if stool tests inconclusive.

Pubic Lice & Scabies

📌 Overview

- Pubic lice (Phthirus pubis) → crab-like insects in pubic hair, suck blood → itching.
- Scabies (Sarcoptes scabiei mite) → burrow in skin, lay eggs.

✳️ Key Features

- Spread by close contact + fomites (bedding, towels, clothes).

- Survive 1–3 days outside body.
- Symptoms: intense itching, burrows (scabies), visible lice/nits (pubic lice).

💊 Treatment

- Topical permethrin or medicated lotions/creams.
- Wash clothing, bedding, and towels in hot water.

🎯 Exam Points

- HIV → HIV-1 (global), HIV-2 (West Africa), ↓ CD4, AIDS <200, dx by ELISA + Western blot/PCR.
- PID → ascending infection, polymicrobial, GC/Chlamydia major causes, infertility/ectopic risks.
- HPV → low-risk (6,11) warts, high-risk (16,18,31,33) cancer, dx Pap smear, vaccine = Gardasil.
- Giardiasis → Giardia lamblia, fecal-oral, diarrhea + malabsorption, dx stool microscopy (≥3).

- Pubic lice/scabies → parasitic, itching, treated with permethrin creams.