An Approach to Vulva, Vagina and STI’s

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Conflict of Interest Disclosures

• I have not had in the past 3 years, a financial interest, arrangement or affiliation with one or more organizations that could be perceived as a direct or indirect conflict of interest in the content of this presentation.
Objectives

- Review anatomy
- Identify common vaginal conditions and their treatment
- Identify common vulvar lesions and their treatment
- Review STI’s and their presentation/treatment
**Vulva** is a collective term for external genital organs

- Comprises the mons pubis, labia majora, labia minora, hymen, clitoris, vestibule, urethra, Skene’s glands, Bartholin’s glands, and vestibular bulbs

- The entire vulvar area is covered by keratinized, **stratified squamous epithelium** that becomes thicker and more pigmented as the distance from the vagina increases
The vagina is a thin walled, distensible, fibromuscular tube extending from the vestibule of the vulva to the uterus.

- Vaginal mucosa is a stratified, nonkeratinized squamous epithelium.
- In response to Estrogen, this mucosa is thick, rugated and rich in glycogen.
- Without Estrogen, the mucosa is thin, pale, and easily friable.
**Estrogen** stimulation is responsible for maintaining a well-epithelialized vaginal vault during the reproductive years. **Estrogen** acts on its receptors in the vagina, vulva, urethra, and trigone of the bladder to:

- Maintain the collagen content of epithelium, which affects its **thickness and elasticity**
- Maintain acid mucopolysaccharides and hyaluronic acid, which keeps epithelial surfaces **moist**
- Maintain optimal genital **blood flow**
Vulva and Vagina

* Glycogen from sloughed cells is the substrate for *lactobacilli*, which convert glucose into lactic acid, thereby creating an **acidic** vaginal environment (the pH of an estrogenized vagina ranges from **3.5 to 5.0**)
* The acidity of the vagina helps maintain the normal vaginal flora and protect the urogenital area from vaginal and urinary tract infections
Hypoestrogenic states:

- Postmenopausal
- Pre-pubertal
- Pregnancy (relative)
- Breastfeeding
- OCP
Micro-organisms present in vaginal flora arise from the gut.

In normal state, the pH of the vagina is maintained by:

- *Lactobacilli* Increase acidity
- *Corynebacteria* Increase acidity
Vulva and Vagina

* Normal vaginal flora is facultative

**Gram Positive Rods** (*lactobacilli; diptheroids*)

**Gram Positive Cocci** (*Staph. Epidermis; Staph. Aureus; Beta-hemolytic strep; Enterococci*)

**Gram Negative** (*E. coli; Klebsiella*)

**Anaerobes** (*Peptococcus; Peptostreptococcus; Bacteroides; Fusobacterium; Clostridium; Eubacterium*)
At normal acidic pH, vaginal flora predominate.

- Factors that alter this pH can create problems:
  - Cervical mucus: alkaline
  - Menstrual flow: alkaline
  - Vaginal transudate: transient rise in pH
  - Semen: transient rise in pH
Vaginitis

* History and physical
  * Symptoms
  * Sexual history
  * Medical history
  * ***Hygiene history***
  * Speculum exam
Vaginitis

* Symptoms
  * Duration
  * Pruritis
  * Colour
  * Odour
  * Consistency
  * Pain
Vaginitis

- Sexual History
  - Active?
  - How many partners?
  - Abuse?
  - Contraception?
  - Concurrence with outbreak?
Medical History

- Any medications that may compromise normal vaginal pH (ie. Antibiotics)
- Known inflammatory conditions?
- Immunocompromised?
- History of previous vaginitis?
Vaginitis

- **Hygiene History**
  - Thongs or briefs?
  - Sleeping with or without underwear?
  - Consistent tight clothing use?
  - Wax, shave, depilatory, or laser?
  - Use of OTC douche or other vaginal products
  - Daily panty liner use?
  - Perfumed soaps/ bodywash?
  - Bath or shower?
  - Urination/washing after intercourse?
Vaginitis

- Physical examination
  - Vulva, vagina, and cervix
  - Wet prep of discharge
  - pH of secretions
  - Cultures: vaginal and cervical as needed
Candida Vaginitis

- Candida
  - Most common cause of vaginitis
  - Usually levels of Candida are kept under control by *lactobacillus* & *corynebacter*
  - Found in all age groups
Candida Vaginitis

* Candida
  * Signs and Symptoms
    * Pruritis
    * Vaginal dryness
    * Dysparunia
    * Curd-like discharge
    * Onset with recent menses or intercourse
    * Other predisposing conditions
      * Pregnancy, diabetes, recent antibiotics
Candida Vaginitis

- Candida
  - On examination
    - Particles of thick discharge adherent to vaginal walls
    - Thick and dry
* Candida
  * On examination
    * pH < 5.0
    * KOH prep- budding and hyphae
Candida Vaginitis

* Candida
  * C. albicans most common
  * C. glabrata
    * Less discharge
    * Burning
    * Usually mild
    * Spores
Candida Vaginitis

- Candida
  - Treatment
    - Topical antifungals
      - OTC (Monistat, Canesten)
      - Prescription (Terazol)
    - Oral antifungals
      - Diflucan (150 mg po x1)
    - Gentian violet
    - Vaginal boric acid (recurrent yeast)
  - **Many women treat ANY itch as Candida; important to confirm that it is indeed Candida before treatment**
* **Bacterial Vaginosis**

* BV results from an alteration in the normal pH of the vagina, allowing overgrowth of one bacterium. **It is NOT an infection.**

* **Symptoms**
  * Discharge: thin, usually white or gray
  * Fishy odor
    * 2º to amines produced by anaerobic bacteria
    * Under alkaline conditions (eg intercourse)
  * Burning with urination and vulvar pruritus
  * Sometimes asymptomatic
* Bacterial Vaginosis
  * On examination
    * Grey, homogeneous, creamy discharge
Bacterial Vaginosis

- On examination
  - Whiff test (add KOH to culture; strong fishy odour)
  - Vaginal swab
  - pH 5-6
  - Clue cells (vaginal epithelial cells covered in bacteria)

* **Gardnerella**, *Mobiluncus*, *Bacteroides*, and *Mycoplasma* are the most common organisms seen in BV
BV Vaginitis
Bacterial Vaginosis

Treatment

- Metronidazole (Flagyl)
- Clindamycin
- $\text{H}_2\text{O}_2$ douche
- **Hygiene alterations to prevent recurrence**
- Asymptomatic BV is generally not treated; unless in a pregnant patient
Trichomonas Vaginitis/STI

* **Trichomonas**
  * Flagellated protozoa *Trichomonas vaginalis*
  * Able to survive for 24 hrs in tap water, hot tubs
  * Usual innoculus- semen
  * Humans are the only natural host
Trichomonas Vaginitis/STI

- Trichomonas
Trichomonas Vaginitis/STI

- **Trichomonas**
  - **Symptoms**
  - Copious discharge, thin, malodorous, “frothy” (found in fewer than 10% of women with Trich!)
  - Pruritis
  - Dysparunia
  - Post coital bleeding
  - Acquired through sexual contact
* **Trichomonas**
  * **On Examination**
    * Punctate hemorrhages visible on the vagina and cervix: “strawberry cervix” *(only 2% of cases)*
    * Greyish-white to greenish
    * Frothy character to discharge
      * 2° to CO₂ released
      Exam may be normal!!!
Trichomonas Vaginitis/STI

* Trichomonas
  * Diagnosis
    * Microscopy and pH>4.5
    * Culture on Diamond’s media
    * PCR
Trichomonas Vaginitis/STI
Trichomonas Vaginitis/STI

- **Trichomonas**
- **Treatment**
  - Metronidazole (Flagyl)
    - Dose (2g x one dose, 500 gm bid x 7 days)
  - Treat partner!
- **Complications**: associated with PPROM, PTL, post hysterectomy and C/S infection
## Vaginitis

<table>
<thead>
<tr>
<th>Diagnostic Criteria</th>
<th>Normal Vulva</th>
<th>Candida Vulva</th>
<th>Bacterial Vaginosis</th>
<th>Trichomonas Vulvovaginitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms</td>
<td>None</td>
<td>Pruritis, Soreness</td>
<td>Variable, 50% asymptomatic</td>
<td>Pruritis, often symptomatic</td>
</tr>
<tr>
<td>Discharge</td>
<td>White, flocculent</td>
<td>Thick “cottage cheese”, white to yellow</td>
<td>Thin, white to grey, homogeneous</td>
<td>Profuse, green, watery</td>
</tr>
<tr>
<td>Amine odour With 10% KOH</td>
<td>None</td>
<td>None</td>
<td>Present</td>
<td>May be present</td>
</tr>
<tr>
<td>Microscopy</td>
<td>Lactobacilli, epithelial cells (40%)</td>
<td>Pseudohyphae (90%)</td>
<td>Clue cells (90%)</td>
<td>Motile trichomonads (60%)</td>
</tr>
</tbody>
</table>
Foreign Body Vaginitis

- Foreign Bodies
  - Not uncommon in prepubescent girls
  - Anything in the vagina can cause irritation
  - Paper, cotton, small toys
  - Tampons
Foreign Body Vaginitis

* Symptoms
  * Discharge
  * Vaginal spotting
  * Symptoms secondary to irritation and drying of the mucosal lining
Foreign Body Vaginitis

- Inspection
  - Examination under anaesthesia (in pediatric patients)
  - Vaginoscopy
  - Flushing the vagina to remove the object
Atrophic Vaginitis

- Atrophic
  - Due to lack of estrogen (postmenopausal/pre-pubertal)
  - Pinkish blood tinged discharge
Atrophic Vaginitis

- Atrophic
  - On examination
    - Pale
    - Pasty
    - Bleeds easily
Atrophic Vaginitis

- Atrophic
  - Treatment
    - Estrogen
      - oral or topical cream (Premarin)
      - Vagifem tablets
    - Topical lubricants
      - Replens
      - KY
Sexually Transmitted Infections

Definition

- Any condition that can be *primarily* acquired through sexual activity (vaginal, oral, anal sex)
Sexually Transmitted Infections

Categories include

* Bacterial
  * Gonorrhea, Chlamydia, Syphilis, Chancroid, Granuloma Inguinale, Lymphogranuloma Venereum
* Viral
  * HSV, HPV, HIV, Hepatitis, Molluscum contagiosum
* Fungal
  * Candidiasis
* Parasitic
  * Lice, Scabies
* Protozoal
  * Trichomonas
Neisseria Gonorrhea

- Intracellular gram-negative diplococcus
- Incubation 3-7 days
- Inhabits periurethral glands, crypts of endocervix
- Doesn’t survive outside the body
Neisseria Gonorrhea

- Symptoms
  - dysuria, frequency, purulent discharge
  - urethritis
  - Symptoms mild or absent in 50% of cases
- Infection may ascend
- PID occurs in 10-49% of women with cervical Gonorrhea
Neisseria Gonorrhea

- **Diagnosis**
  - Cervical swab NAATS
  - PCR (urine sample)
- **Reportable disease: must treat sexual contacts!**
  - Treatment takes into account the likelihood of co-infection with Chlamydia
  - **Ceftriaxone 250 mg IM** or
  - Cefixime 400 mg PO
  - PLUS: **Azithromycin 1 gm PO single dose**
Neisseria Gonorrhea

* Complications:
  * Disseminated gonococcal infection occurs in 0.5-3% of patients
  * Triad of acute polyarthralgias, tenosynovitis and dermatitis OR
  * Purulent arthritis without associated skin lesions
Chlamydia trachomatis

- Small gram negative intracellular bacterium
- Most common STI (4 million women annually)!
- Difficult to isolate: cannot be cultured on artificial media
- High rate of infertility; secondary to tubal disease
Chlamydia trachomatis

- Symptoms
  - Majority are asymptomatic
  - Vaginal discharge
  - Mucopurulent cervicitis
  - Abdominal pain
  - Urethritis
**Chlamydia trachomatis**

- **Diagnosis**
  - Cervical swab NAATS
  - Urine PCR

- **Treatment**
  - Reportable disease: must treat sexual contacts!
  - *Azithromycin 1 gm PO single dose* OR
  - Doxycycline 100mg PO BID x 7 days
  - Test for cure to be done >3 weeks after completion of therapy
Chlamydia trachomatis

* Untreated Chlamydia infections are a major cause of fallopian tube damage leading to infertility and ectopic pregnancy!
30% of women with Chlamydia will develop PID if left untreated

Fitzhugh-Curtis syndrome: peri-hepatic adhesions following PID
Sexually Transmitted Infections

**Syphilis**

- Spirochete *Treponema pallidum*
- Burrows into the mucosa
- Will not grow in culture
**Syphilis**

* Stages
  * **Primary**
    * Formation of a painless ulcer “*chancre*” at the site of inoculation (10-90 days after infection)
    * Highly contagious at this stage.
    * Often self-resolving
Sexually Transmitted Infections

- **Syphilis**
  - **Stages**
    - **Secondary**
      - Often weeks to months after infection
      - Lasts 4-6 weeks
      - Systemic symptoms (fever, headache, malaise)
      - Characteristic **rash** involving palms and soles of the feet
      - Large, flat warts (**Condyloma lata**)
      - Diffuse lymphadenopathy
Sexually Transmitted Infections

Syphilis

* **Stages**
  * **Latent**
    * Asymptomatic carriers
    * Serologically positive
    * Can last for 20 years or more
  * **Tertiary**
    * Occurs anywhere from 1-30 years after primary infection
    * CNS involvement: neurosyphilis, general paresis and tabes dorsalis
    * Cardiovascular syphilis: aortitis
    * Gummatous syphilis: granulomatous, nodular lesions occurring most commonly in skin and bones
Sexually Transmitted Infections

**Syphilis**

* Diagnosis
  * Scraping the ulcer and looking for the bacterium (darkfield microscopy)
  * VDRL (screening test) for evidence of infection
  * Fluorescent treponemal antibody test

* Treatment
  * Penicillin G 2.4 million units I.M single dose
  * The only satisfactory treatment for penicillin allergic patients with syphilis is desensitization followed by penicillin therapy
Granuloma Inguinale (Donovanosis)

- Causative agent: *Calymmatobacterium granulomatis*/*Klebsiella Granulomatis*
- Common in tropical climates; <20 cases/year in the US
- Chronic ulcerative infection of the vulva
- Characteristic beefy-red painless ulcer with fresh granulation tissue
- **Donovan** bodies on smear
- Treat with Trimethoprim/sulphamethoxazole OR Doxycycline
Sexually Transmitted Infections
**Lymphogranuloma Venereum**

- Causative agent: *Chlamydia trachomatis*
- Chronic infection of lymphatic tissue
- Found mostly in the tropics
- 1 infection is a shallow, painless ulcer
- 2 phase marked by painful inguinal lymphadenopathy; infected nodes can form bubos
- "groove sign" double genitocrural fold
- Treatment: Doxycycline
Genital Herpes

- Infection with HSV-1 or HSV-2

- Transmitted by direct contact but can occur with asymptomatic carriers
- Double stranded DNA virus
- Lifelong infection with recurrent outbreaks
- Pregnancy risk to fetus
Sexually Transmitted Infections

Genital Herpes (HSV 1 or HSV 2)

- Symptoms
  - 3-7 day incubation
  - May be asymptomatic
  - **Painful** blisters/ulcers in 24-72 hrs
  - Fever, headache, malaise, lymphadenopathy
  - Resolves in 2-6 weeks
Genital Herpes

* Diagnosis
  * Visual inspection of sores
  * Unroof lesion; fluid for PCR
  * Swab of ulcer base for viral culture (less sensitive)
  * Bloodwork (non-specific)
Sexually Transmitted Infections

Genital Herpes

* Treatment
  * Antivirals (may inhibit viral replication)
  * Acyclovir, Famcyclovir, Valacyclovir
Condylomata Accuminata

- Caused by infection with Human Papilloma Virus (HPV)
- Common vulvar complaint
- Acquired through direct contact
- May remain dormant for years
Sexually Transmitted Infections

**Condylomata Acuminata**

- Symptoms
  - Growths on skin
  - Pruritis
  - Bleeding
  - Mass effect
**Sexually Transmitted Infections**

**Condylomata Acuminata**

* Diagnosis
  * Often a clinical diagnosis
  * Biopsies of lesions when uncertain
Condylomata Acuminata

* Treatment
  * Topical
    * Podophyllin, Imiquimod, Liquid Nitrogen, TCA
  * Surgical
    * Laser, excision, cautery
* Vaccine
  * Gardasil (only vaccine aimed at wart strains; HPV 6 &11)
**Molluscum Contagiosum**

- Causative agent: *Poxvirus*
- Asymptomatic viral disease seen at the vulva
- Characteristic lesion: umbilicated papule
- Acquired via non-sexual contact
- Does not grow on mucous membranes!!
- Tx: unroof the lesions with small gauge needle; cryo; or electrocautery
Vulvar Disease

- Common reason for gynecologic referral
- Vulvar hygiene is not well taught
- Patients often have never/will never assess the area themselves
- May be reluctant to bring it up to their GP: embarrassing, socially unacceptable
Vulvitis

* **Vulvitis**: inflammation involving the vulva

* Common Symptoms
  * Pruritis
  * Burning
  * Splitting
  * Irritation
  * Swelling
  * Bleeding
Vulvitis

* **History**
  * Duration, symptoms, medical history, hygiene history

* **Pelvic Examination**
  * ***Observation***
  * Magnification
  * Acetic Acid Application (3-5%)
  * Biopsy as needed
Recognize Normal Anatomy
Vulvitis

* Investigations
  * Vaginal secretions: microscopy
  * Cultures
  * Colposcopy
  * Blood tests
  * Sensory testing: Q-tip testing
  * Methylene Blue/Pyridium
* Biopsy: when in doubt or suspicious of cancer
Lichen Sclerosis

- **Lichen Sclerosis**
  - Etiology unknown: associated with hypoestrogenic states/autoimmune disorders
  - Prevalence high!!

- **Symptoms**
  - Burning
  - Itching
  - Pain/bleeding/splitting
  - Dyspareunia
  - Dysuria
  - Asymptomatic
Lichen Sclerosis

- Advanced disease can lead to **loss of normal architecture**
- Agglutination of clitoral hood/labia majora
- Voiding difficulties
- Sexual dysfunction
- Vulvar skin appears pale, white, “tissue paper” consistency
- Bleeds/splits easily
Lichen Sclerosis
Lichen Sclerosis

* Treatment
  * Mid-high potency corticosteroids
    * Clobetasol 0.05% ointment qhs
    * Hydrocortisone 1% ointment qhs
  * Treatment is continuous: LS is a chronic condition!!
Lichen Planus

- Lichen Planus
  - Autoimmune disorder
  - More common in peri and post-menopausal women
  - May affect the mucous membranes of genitals but also oral cavity, skin, nails, GI tract
Lichen Planus

- Variable presentations
- White “lacy” papules
- Hypertrophic scarring; similar to Lichen Sclerosis
- Erosive red plaques
- Occurs in the vulva and vagina
- Characteristic oral “Wickham striae”
Lichen Planus

Erosive vaginal lichen planus
Lichen Planus

- Lichen Planus
  - Treatment:
  - Clobetasol 0.05% ointment qhs
  - Severe cases may require systemic steroids
* **Pediculosis Pubis** = Lice
  * Transmitted by close contact, towels, or bedding
  * >90% of sexual partners infected following a single exposure
  * Confined to areas of the vulva; sometimes seen on eyelashes
  * Feed on blood
Vulvitis
Vulvitis

* Pubic Lice
  * Symptoms
    * Pruritus particularly of the mons pubis
  * Treatment
    * Kwellada: not for pregnant or lactating women!
    * Nix cream
    * Wash all clothing, linens in hot water and hot dryer
    * Treat all contacts!!!
    * Examine after one week and retreat as needed
Vulvitis

* General Vulvar Care
  * Avoid washing underwear with harsh detergents
  * Avoid Scented bath products/soaps/oils
  * Avoid soaps inside the vagina
  * Dry the area thoroughly after bathing
  * Avoid scented pads/tampons
  * Avoid daily pad use
  * Avoid occlusive clothing
  * Don’t wear underwear while sleeping
  * Cotton briefs, not polyester thongs
  * Avoid douche/ Vagisil/ etc