



## Chapter 98 – Sexually Transmitted Infections

### Episode Overview:

- List 6 causes of each of the following:
  - Genital ulcers
  - Genital discharge
  - Epithelial cell lesions
  - Ectoparasites
- List the differential diagnosis of painful and painless genital lesions.
- Differentiate between primary and recurrent herpes infection
- List 4 techniques for the diagnosis of herpes and how it is managed?
- List 3 complications of herpes infection
- What are the clinical stages/phases of syphilis? How do you diagnose syphilis? How are the phases managed?
- What are the causes of chancroid? How is it managed?
- List the treatment options for & complications of chlamydia and gonorrhea infections
- Compare differences in presentation and treatment (table 88.3) between Trichomonas, BV, and Candidiasis, and Non-gonococcal urethritis.
- List 5 risk factors for PID
- List clinical findings that support a diagnosis of PID as described by the CDC
- Describe inpatient and outpatient treatment regimens for PID
- List factors which favor admission in PID
- What are some treatment options for condylomata acuminata (genital warts)?
- What is molluscum contagiosum and how is it managed?
- Describe the diagnosis and management of ectoparasites (pediculosis pubis and scabies).
  - Pediculosis pubis: Parasitic infection caused by *Phthirus pubis*.
  - Scabies: *Sarcoptes scabiei* is the mite responsible for scabies.

### Wisecracks:

- What is a Jarisch-Herxheimer reaction?
- What is the specific pathogenic cause of
  - Syphilis
  - LGV
  - Chancroid
  - Granuloma inguinale (Donovanosis :( ....the worst)

### Questions:

- List 6 causes of each of the following: (table 88.1)
  - Genital ulcers**
    - Genital herpes
    - Primary syphilis
    - Chancroid
    - Lymphogranuloma venereum (rare)
    - Granuloma inguinale (rare)



- vi. Neoplasm/Trauma
- d. Genital discharge**
  - i. Gonorrhea
  - ii. Chlamydia
  - iii. Nongonococcal urethritis (NGU)
  - iv. Pelvic inflammatory disease (PID)
  - v. Trichomoniasis
  - vi. Bacterial vaginosis
- e. Epithelial cell lesions**
  - i. Genital warts
  - ii. Secondary syphilis
  - iii. Molluscum contagiosum
  - iv. Neoplasm
  - v. Nevi
  - vi. Skin tags
- f. Ectoparasites**
  - i. Pubic lice
  - ii. Scabies
  - iii. Body/Head lice
  - iv. Mites (chiggers)
  - v. Ticks

**2. List the differential diagnosis of painful and painless genital lesions.\*\*\*\***

- a. Painful
  - i. Genital herpes
  - ii. Chancroid
  - iii. Behcet's syndrome
- b. Painless
  - i. Syphilis
  - ii. Lymphogranuloma venereum
  - iii. Granuloma inguinale

**3. Differentiate between primary and recurrent herpes infection**

Genital Herpes Infection	Primary	Secondary
Etiology	Infection with HSV-1 or HSV-2 in absence of pre-existing antibodies.	Reactivation of latent infection. More common with HSV-2 than HSV-1.  Often secondary to variety of stressors including acute illness/injury, immunosuppression, physiologic stress, and menses.
Symptoms	Cluster of erythematous, painful lesions, which quickly ulcerate (external genitalia,	Generally less symptomatic with lesions occurring in the same



	<p>perineum, buttocks, rectum, and oropharynx).</p> <p>Dysuria is common secondary to proximity of lesions to the urethra.</p> <p>Generally more painful and symptomatic with tender regional lymphadenopathy, fever, headache and malaise +/- other systemic symptoms.</p>	<p>distribution due to reactivation of latent infection in the affected nerve roots.</p> <p>Prodromal symptoms of itching, burning, and paresthesias common prior to development and skin and mucosal lesions.</p>
Duration	Generally lasts 2-4 weeks if untreated before spontaneous resolve.	Generally shorter duration than primary with decreasing frequency and severity over time.

**4. List 4 techniques for the diagnosis of herpes; how is it managed?**

- a. Clinical: History of similar lesions in same distribution supports clinical diagnosis though insensitive and nonspecific.
- b. PCR diagnostic test of choice - highest Sn/Sp in presence of active lesions.
- c. Direct fluorescent antibody (DFA)
- d. Serology for HSV

\*Consider dark-field microscopy and serologic testing for syphilis to help differentiate the two. Cytologic testing is insensitive and nonspecific and should not be relied upon to make diagnosis of HSV.

**Management: See Table 88.2.**

- 1) Not curative, but decrease duration, severity and the development of complicated infection (especially when initiated in first 72 hours). Majority managed with oral as outpatient - parenteral if systemic complications.
- 2) Daily antiviral therapy will decrease the frequency while being taken but does not affect frequency or severity once discontinued.
- 3) Topical antiviral therapy not recommended.

**Example regimens:**

**Primary:** Acyclovir 400 mg PO TID x 7-10 days  
 Valacyclovir 1000 mg PO BID x 7-10 days

**Secondary:** Acyclovir 400 mg PO TID x 5 days  
 Valacyclovir 1000 mg PO daily x 5 days

**5. List 3 complications of herpes infection**

- a. Meningoencephalitis
- b. Hepatitis or Pneumonitis
- c. Disseminated infection



**6. What are the clinical stages/phases of syphilis? How do you diagnose syphilis? How are the phases managed?**

Syphilis	Manifestation
Primary	<p>Painless papule at the site of inoculation → ulceration forming chancre (relatively painless, clean based ulcer with well demarcated, indurated edges 1-2 cm in size).</p> <p>Non-tender regional lymphadenopathy may be seen. Often in genital or perianal region but may be present in oropharynx, breast, or hands etc.</p>
Secondary	<p>Presents in ~25% of patients with primary infection over weeks → months.</p> <p><b>Rash</b> - diffuse and highly variable.</p> <p><b>Generalized lymphadenopathy</b> - diffuse, rubbery and non-tender.                      *Epirochlear adenopathy particularly suggestive.</p> <p><b>Mucous membrane lesions</b> - multiple shallow erosions of oropharyngeal mucosa. Condylomata lata resemble genital warts and are broad based papular lesions.</p> <p><b>Systemic symptoms</b> - low-grade fever, anorexia, headache, malaise, myalgias, and weight loss.</p>
Latent	<p>Serologic evidence in absence of clinical signs or symptoms.</p> <p>&lt;12 months - early latent (infectious).</p> <p>&gt;12 months - late latent (non-infectious with the exception of pregnant patients).</p>
Tertiary	<p>Cardiovascular and gummatous disease (uncommon) including aortitis, aortic aneurysm, and gummatous lesions of the skin, bone, and other organs.</p>

**Diagnosis:** *Treponema pallidum* is the spirochete that causes syphilis. Fastidious organism and cannot be cultured in the laboratory. Confirmed with dark field microscopy or serologic testing (non-treponemal VDRL/RPR and treponemal FTA-ABS/MHA-TP).

**Dark field microscopy** - visualization of spirochete obtained from chancre provides spot diagnosis. Limited by specialized laboratory equipment, proper specimen collection, and experience of the microscopist.

**Non-treponemal test VDRL/RPR** - utilized for screening purposes providing **quantitative** measurements of nonspecific antibodies produced in response to infection with *T. pallidum*. Sn 70-80% in primary and rises to nearly 100% in secondary infection.



**Treponemal test FTA-Abs/MHA-TP** - utilized to confirm the diagnosis in context of positive non-treponemal result \*always confirmed following initial positive study\*. Provide **qualitative** measurements of specific antitreponemal antibodies. Highly specific and may remain positive even after successful treatment and cure.

**Management:** Benzathine Penicillin G 2.4 million units IM single dose in primary, secondary, and early latent syphilis and generally curative. Penicillin allergy - Doxy/Tetracycline x 2/52.

Penicillin remains drug of choice in pregnancy, neurosyphilis, and congenital syphilis, even in the presence of penicillin allergy. Admission for desensitization and treatment.

**7. What is the causes of chancroid? How is it managed?**

**Chancroid** - Ulcerating infection caused by gram-negative organism *Haemophilus ducreyi*. Common in developing world but extremely uncommon in Western world.

Incubation of less than a week preceded by tender erythematous papule that rapidly ulcerates to form multiple, irregular, inflamed, painful, and 'dirty' ulcers. Painful inguinal lymphadenopathy is common.

**Management:** Ceftriaxone 250 mg IM single dose.  
 Azithromycin 1000 mg PO single dose.  
 Ciprofloxacin 500 mg PO BID x 3 days.

**8. List the treatment options for & complications of chlamydia and gonorrhea infections (table 88.3)**

- a. Chlamydia (urethritis, cervicitis, proctitis, pharyngitis)
  - i. Azithromycin 1 g PO single dose or Doxycycline 100 mg PO BID x 7 days.
- b. Gonorrhea (urethritis, cervicitis, proctitis, pharyngitis)
  - i. Ceftriaxone 250 mg IM single dose plus Azithromycin 1 g PO single dose.
- c. **What makes an STI “complicated”:** list three conditions (table 88.4)
  - i. Disseminated gonorrhea
  - ii. Gonococcal conjunctivitis
  - iii. Epididymitis/orchitis

**9. Compare differences in presentation and treatment (table 88.3) between Trichomonas, BV, and Candidiasis, and Nongonococcal urethritis.**

	Presentation	Physical exam	Treatment
<b>Trichomonas</b>	Females - vaginal discharge, pruritus, dysuria, urinary frequency, dyspareunia, and postcoital bleeding.	Females - erythema of vaginal mucosa and vulva, in addition to the discharge. Punctate hemorrhage (strawberry cervix is	Metronidazole 2 g PO single dose.  Tinidazole 2 g PO single dose.



	Males - often asymptomatic but may cause dysuria and urethral discharge.	seen in 10% of patients.	
<b>Bacterial vaginosis</b>	Often asymptomatic though women may experience a malodorous, thin whitish vaginal discharge. Fishy odour is often reported.	Fishy odour accentuated with addition of 10% KOH solution to wet mount slide (whiff test).	Metronidazole 500 mg PO BID x 7 days.  Metronidazole gel 0.75% 5 g intravaginally once daily x 5 days.  Clindamycin cream 2% 5 g intravaginally qhs x 7 days.
<b>Vulvovaginal candidiasis</b>	Common nonspecific findings of pruritus, abnormal discharge, dyspareunia, and external dysuria.	Vulvar erythema and edema with satellite lesions, erythema of the vaginal mucosa, and a thick curdy whitish vaginal discharge.	Fluconazole 150 mg PO single dose.  Topical OTC antifungal x 7 day course (clotrimazole, miconazole, butoconazole).
<b>Nongonococcal urethritis</b>	Patients often asymptomatic. When present, often less prominent than those with gonococcal urethritis.	Clinical features are not sufficiently specific to distinguish NGU from gonococcal urethritis and coinfection is common.	Azithromycin 1 g PO single dose plus Ceftriaxone 250 mg Im single dose when gonorrhea has not been ruled out with negative NAATs.  Metronidazole 2 g PO single dose recommended for cases of trichomonas.

**10. List 5 RFs for PID**

- a. Multiple sexual partners
- b. Age <25
- c. Partner with an STI
- d. History of STI
- e. History of PID

**11. List clinical findings that support a diagnosis of PID as described by the CDC**

Diagnosis should be considered and presumptive treatment initiated in any sexually active woman at risk for STD's who presents with lower abdominal or pelvic pain and one or more of the following findings on pelvic examination:

- a. Cervical motion tenderness or
- b. Uterine tenderness or
- c. Adnexal tenderness

\*Additional criteria on Table 88.5 improves specificity but decreases the diagnostic sensitivity.



## 12. Describe inpatient and outpatient treatment regimens for PID

- a. Inpatient:
  - i. CefoXAtan 2 g IV q6-12h plus Doxycycline 100 mg PO/IV q12h x 10 days.
  - ii. Clindamycin 900 mg IV q8h plus Gentamicin 2mg/kg IV load then 1.5mg/kg q8h
- b. Outpatient:
  - i. Ceftriaxone 250 mg IM single dose plus Doxycycline 100 mg PO BID x 14 days. +/- Metronidazole 500 mg PO BID x 14 days.

\* Sexual intercourse should be deferred until symptoms have resolved and antibiotic therapy has been completed by the patient and her partner.

## 13. List factors which favor admission in PID

- a. Surgical emergencies cannot be excluded
- b. Pregnancy
- c. Tubo-ovarian abscess
- d. Severe illness, nausea, vomiting, or high fever
- e. Inability to follow or tolerate outpatient regimens.
- f. Failure to respond to oral therapy

## 14. What are some treatment options for condylomata acuminata (genital warts)?

- a. Patient applied
  - i. Imiquimod cream
  - ii. Podofilox solution or gel
  - iii. Sinecatechins ointment
- b. Provider administered
  - i. Surgical excision
  - ii. Cryotherapy
  - iii. Topical therapy with trichloroacetic acid (TCA) or bichloroacetic acid (BCA)

## 15. What is molluscum contagiosum; how is it managed?

- a. Localized skin infection presenting with one or more 2-5 mm papules with waxy appearance, and central umbilication.
- b. Spontaneous resolution typical in 6-12 months. Patients may seek primary care or dermatologic follow up for curettage, cryotherapy, or treatment with topical agents for persistent lesions.

## 16. Describe the diagnosis and management of ectoparasites (pediculosis pubis and scabies).

- a. **Pediculosis pubis: Parasitic infection caused by *Phthirus pubis*.**
  - i. Diagnosis - visual inspection of lice present within the pubic hair or attached to the skin when feeding. The eggs (nits) are attached to the shaft of the pubic hairs.
  - ii. Management - topical permethrin 1% creams and rinses available OTC to be applied to the affected area and washed off after 10



minutes. Resistance may require alternative topical agents or oral ivermectin.

**b. Scabies: *Sarcoptes scabiei* is the mite responsible for scabies.**

- i. Diagnosis - visual inspection often reveals characteristic burrows in the skin. Excoriations, papules, and nodules are frequently seen in the groin, genitalia, axilla, and interdigital web spaces. Diagnosis may be confirmed by microscopic examination of scrapings from characteristic skin lesions, which reveals the mites.
- ii. Management - topical permethrin 5% cream applied topically and washed off after 8-14 hours. Alternative agents include topical benzyl benzoate, topical lindane, or oral ivermectin.

\*Potentially affected clothing and linen should be washed in hot water with detergent.

**Wisecracks:**

**1. What is a Jarisch-Herxheimer reaction?**

- a. Acute worsening of symptoms that may develop after initiation of antimicrobial therapy for syphilis. Typically increased malaise, myalgias, and fever within 24 hours of treatment. Thought to be secondary to sudden lysis of spirochetes, but the mechanism is poorly understood.

\*Making patients aware of this common self-limited phenomenon may prevent a return visit to the ED.

**2. What is the specific pathogenic cause of**

**a. Syphilis**

- i. *Treponema pallidum*

**b. LGV**

- i. *Chlamydia trachomatis* (L1, L2, and L3 serovars)

**c. Chancroid**

- i. *Haemophilus ducreyi*

**d. Granuloma inguinale (Donovanosis :( ....the worst)**

- i. *Klebsiella granulomatis*