Sexually Transmitted Infections

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Learning Objectives

Outline the symptoms, diagnosis, and treatment for

1. Chlamydia and gonorrhea infections: Cervicitis/urethritis and proctitis
2. Complications of chlamydia and gonorrhea: PID and Epididymitis
3. Herpes simplex virus
4. Syphilis

Traditional approach to STDs

Urethritis/cervicitis	Genital ulcer
Gonorrhea (GU)	HSV (painful)
Chlamydia (NGU)	Primary syphilis (painless)
Mycoplasm genitalium	Lymphogranuloma Venerum
Trichomonas genitalium	Chancroid
	Granuloma inguinale

most STDs are asymptomatic

Clinical syndromes

	Clinical syndrome	complaints	findings
Lower tract	cervicitis	Dyspareunia; asymptomatic	Purulent endocervical exudate/ bleeding
	urethritis	Dysuria, drainage; asymptomatic	Drainage
	proctitis	pain, tenesmus, rectal discharge; asymptomatic	Drainage, tenderness, bleeding
Upper tract	PID	Fever, abdominal pain, n/v; asymptomatic	Cervical motion tenderness, fundal/adnexal tenderness
	Epididymitis	Fever, Painful swelling of the scrotum	Tenderness, swelling, erythema
	Latent infection	asymptomatic	Lab finding with syphilis

Question 1: Clinic

19M with asthma presents to walk-in clinic complaining of “pain when I pee” and notes stains in his underwear. On exam, some milky fluid can be squeezed from his meatus. You do not have a microscope available. Which would you do?

A. send urine for culture

B. send urine for GC/Ch NAAT

C. treat with IM ceftriaxone

D. treat with po azithromycin once

E. treat with po doxycycline x 7d

Pathogen, syndrome, treatment

	Proctitis	Cervicitis/urethritis	PID	epididymitis	Genital ulcers	Treatment
Chlamydia	++++++	+++++	+++++	+++++	-	Doxycycline Azithro or levofloxacin
Neisseria	+++++	+++++	+++++	+++++	-	IM ceftriaxone Gent/azithro
HSV	++	+	-	-	+++++	-acyclovir
Treponema pallidum	+	+	-	-	+++	PCN doxy

*CDC Sexually Transmitted Infectious Treatment Guidelines 2021

CDC STI Treatment Guidelines 2021

Recommended treatment	2015	2021
Chlamydial Infection	Azithromycin or Doxycycline	Doxycycline 1g bid x7d
Uncomplicated Gonococcal Infections	Ceftriaxone 250mg IM x1 + Azithromycin 1g po x1	Ceftriaxone 500mg IM x1*

Question 2: Clinic

Same patient from question 1, what else would you send?

A. send serum for HIV screen

B. send serum for HIV viral load

C. send serum for syphilis screen reflex to RPR

D. send serum HSV serology

E. rectal and oropharyngeal GC/Ch NAAT

Lower GU tract STDs = Urethritis / Cervicitis

Diagnosis of Chlamydia and Gonorrhea

- nucleic acid amplification test (NAAT), not culture, STD clinics use microscopy also
  - Women - Vaginal swab or endocervical sample, first catch urine less sensitive
  - Men - First catch urine

Treatment

- gonorrhea – IM ceftriaxone 500mg (<150kg), alternative is azithro + IM gent

- chlamydia – doxycycline 100mg bid x 7d; alternative is azithromycin

Proctitis

- History of anal receptive intercourse

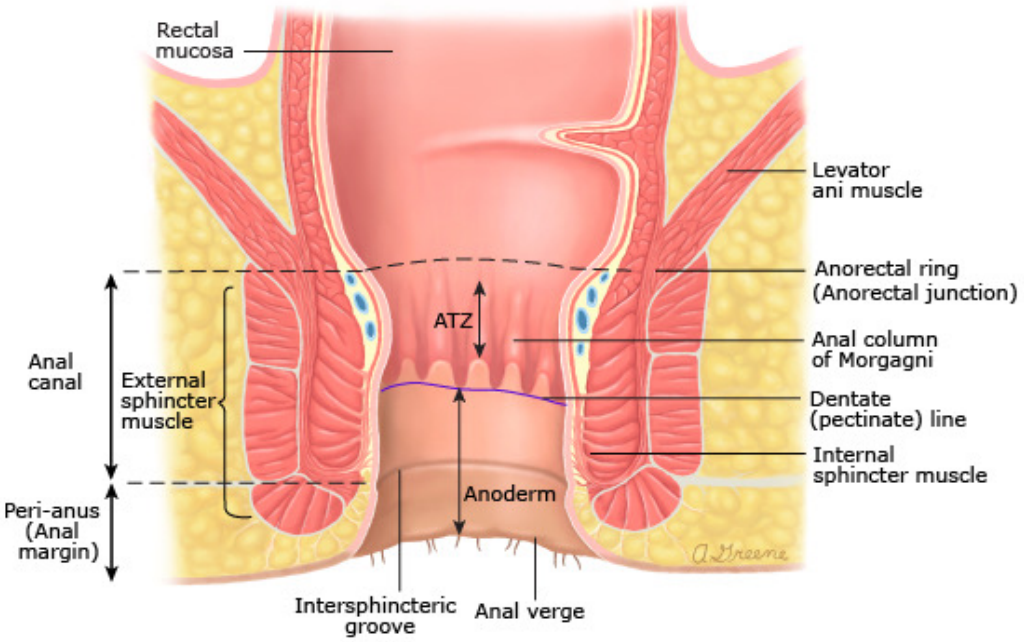
- Diagnosis
  - Anal swab for NAAT GC/Ch
  - If lesion would swab for HSV PCR

Treatment

- IM CTX/doxycycline x7d empirically for all

- consider 21d course of doxycycline if concern for LGV

- if lesions c/w HSV treat with ~acyclovir x7-10d



LGV = Lymphogranuloma Venereum

- Caused by Chlamydia serovars L1, L2, or L3 – which cause more invasion and inflammation than other serovars
- clinically can cause genital ulcer disease, lymphadenopathy, or proctocolitis
- Proctocolitis is the most common presentation and can mimic IBD and if not treated early can cause chronic colorectal fistulas and strictures
- Definitive tests (serovar specific) are not widely available, but Chlamydia NAAT testing should be positive
- Treat empirically, doxycycline 100mg bid x21d

Case 3: Emergency Room

21W with no past medical history presents with abdominal pain x3d, fever and vomiting x1d. She is found to have a T 39.0C, uncomfortable appearing but not toxic. Abdominal exam unremarkable and no costovertebral angle tenderness. Pelvic examination with cervical motion tenderness. You send blood cultures. What is the appropriate empiric treatment?

A. Unasyn

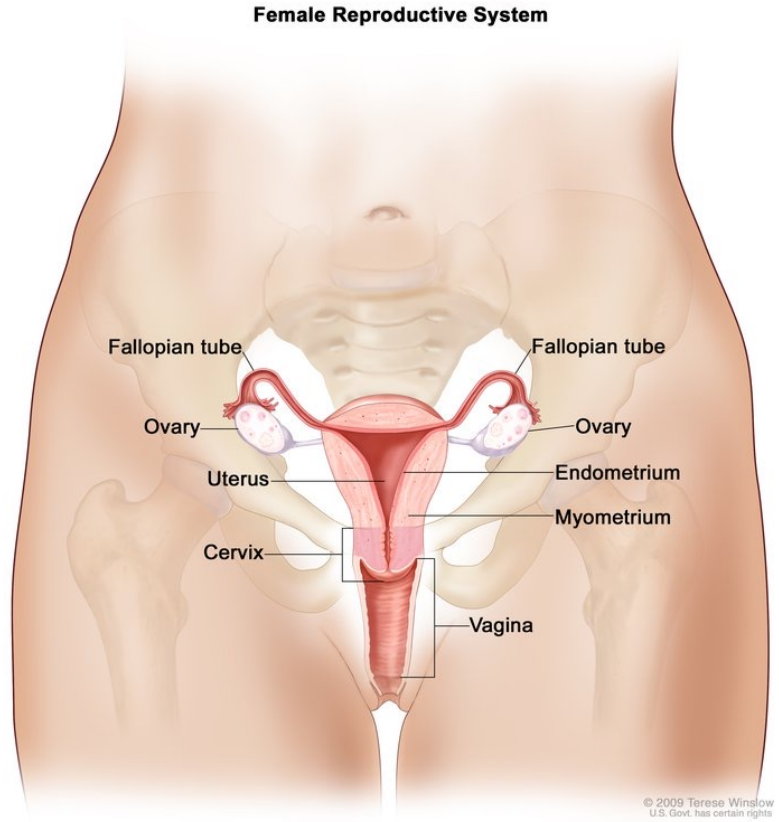
B. po doxycycline and IV ceftriaxone and po metronidazole

C. Unasyn and doxycycline

D. po doxycycline and IV ceftriaxone

PID = Pelvic inflammatory disease

- Upper GU tract infection, ascends from below
- Neisseria gonorrhea and Chlamydia trachomatis are common culprits, but a variety of bacteria can be found and tuboovarian abscesses are typically polymicrobial
- There is substantial subclinical PID
- PID causes infertility and ectopic pregnancy



PID –Treatment

Need to cover GC/Ch, and anaerobes

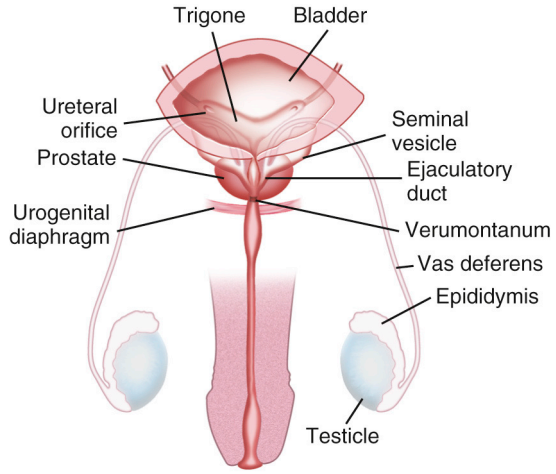
Ceftriaxone 1 g IV every 24 hours
PLUS
Doxycycline 100 mg orally or IV every 12 hours
PLUS
Metronidazole 500 mg orally or IV every 12 hours

Consider TOA

Retest in 3mo, treat partners

Epididymitis

- Two types: (1) non-specific bacterial epididymitis and (2) sexually transmitted epididymitis
- Chlamydia and N gonorrhoeae are the major STD pathogens
- For the insertive partner during anal intercourse, enteric organisms like E. coli



Epididymitis diagnosis and treatment

Diagnosis

- UA, Ucx, urine NAAT gc/ch; frequently scrotal ultrasounds are done to rule out torsion

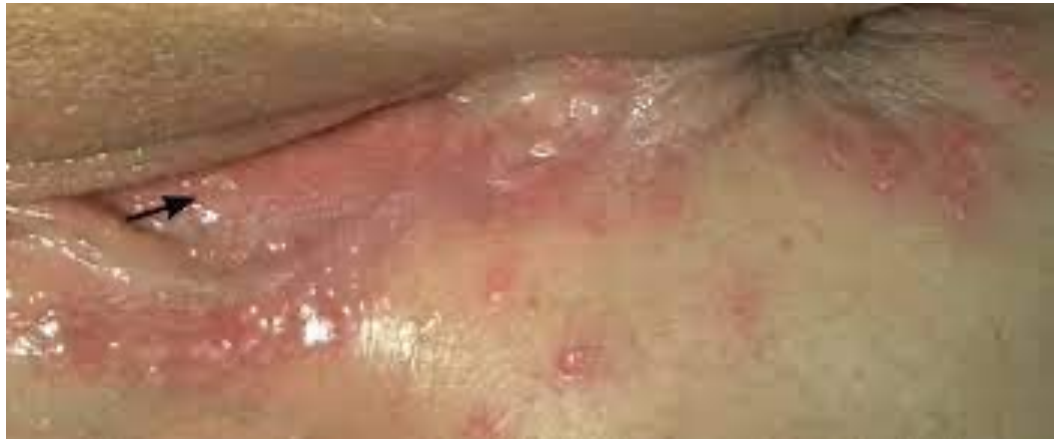
Treatment

- if insertive anal intercourse, cover enteric organisms (levofloxacin 500 mg daily x10d)

- cover for gc/ch with IM ceftriaxone x1 and doxycycline 100mg bid x10d

Case 4: Clinic

30W p/w painful lesions on her vulva x4d. She is concerned she has genital herpes, report being monogamous with her husband for 2 years. What is the best diagnostic test?



A. endocervical swab for viral culture

B. send fluid from lesion for HSV PCR

C. Send vaginal swab for clue cells

D. serum RPR

E. serum HSV IgM and IgG

Genital Herpes

- Type 1 and 2 can both cause genital herpes, recurrent genital herpes are HSV-2
  - HSV-2 is thought to only be sexually acquired

- painful group vesicles which evolve into ulcers

- high prevalence of asymptomatic disease with intermittent subclinical shedding

- 11.9% of US people 14-49 estimated infected (HSV-2 serology in NHANES)

- chronic, lifelong viral infection, intermittent shedding

HSV diagnosis and treatment

Diagnosis

- typically a clinical diagnosis, can confirm with swab of lesion, most sensitive early stages and primary infection
  - PCR, DFA, viral culture (less sensitive)
  - Poor specificity of commercially available type-specific EIAs (39.8%-57.4%), “HSV-2 serologic screening among the general population is not recommended”
  - Treatment – antivirals help but cannot eradicate latent infection

Treatment – valacyclovir, famciclovir, acyclovir

- Cannot eradicate latent infection but help (1) ameliorate symptoms of outbreak (2) decrease recurrence (3) decrease viral shedding/transmission to hsv-2 neg partner
- Topical therapy ineffective

“check me for everything”

1. What we regularly check:

- serum HIV screen

- syphilis/RPR, gc/ch*

2. What we sometimes check:

- HIV VL, HAV ab, HBV panel, HCV panel, trichomonas

3. What we don’t check in asymptomatic general population:

- HSV serology

Case 5a

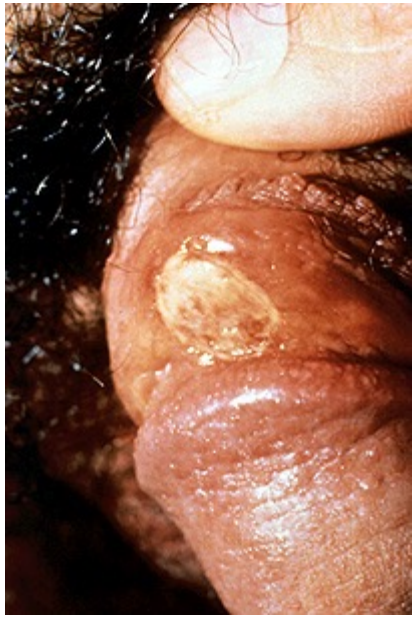
28M with no pmhx was brought to the ER altered, RPR was checked initially for AMS workup, but ultimately patient was found to be intoxicated and mental status returned to normal, no complaints

RPR 1:8
Syphilis confirmatory +

You call DOH, he has never been tested for syphilis before, he denies febrile illnesses, rashes, or chancres in the past year

Case 5b

19M with no pmhx p/w penile ulcer. He reports returning from a trip to Ibiza, Spain, 2 weeks ago.

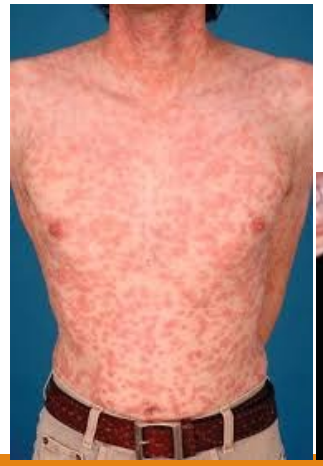


RPR 1:32
Syphilis confirmatory +

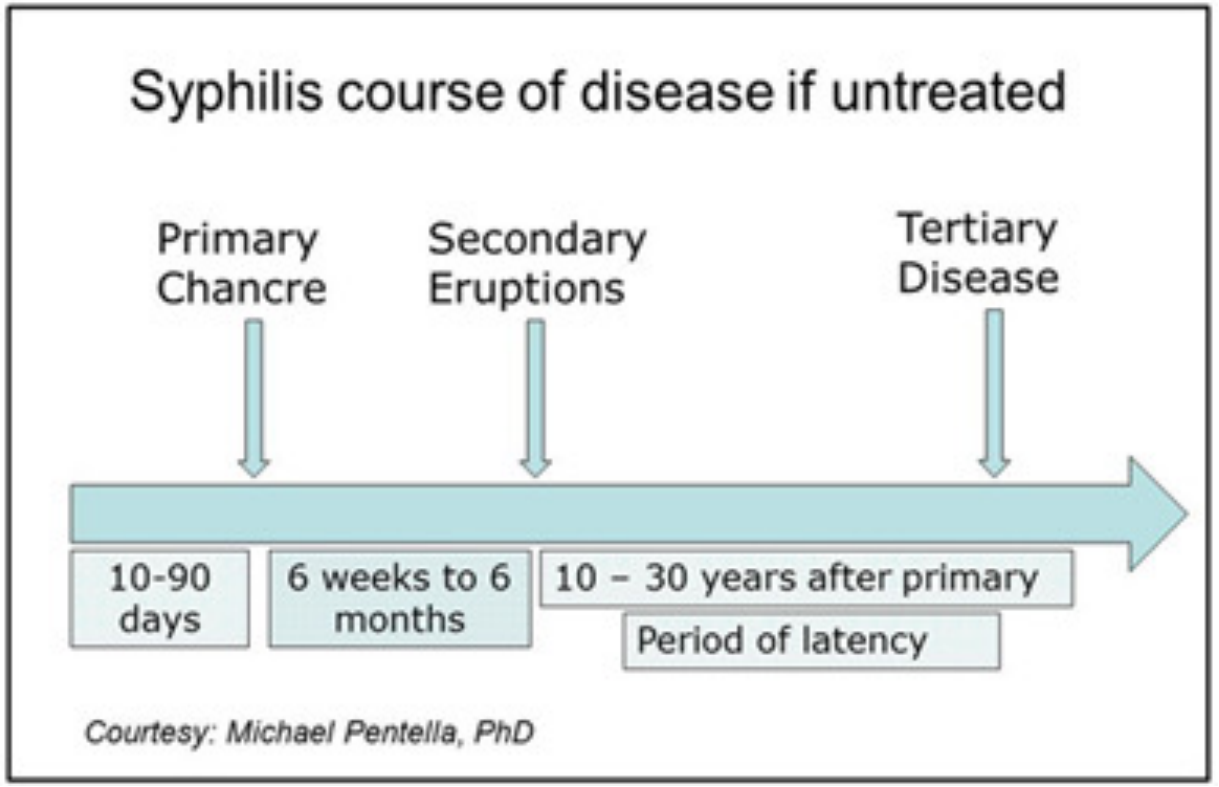
Case 5c

20M with well-controlled HIV (on HAART, VLND, CD4 520), present to ER 2mo after trip to Ibiza complaining of rash, fever, and malaise.

RPR 1:512
Syphilis confirmatory +



Syphilis


Syphilis course of disease if untreated
Primary Chancre
Secondary Eruptions
Tertiary Disease
10-90 days
6 weeks to 6 months
10 – 30 years after primary
Period of latency
Courtesy: Michael Pentella, PhD

How to interpret syphilis testing

Serologic tests (FTA-ABS, TP-EIA)

Treponemal-specific = antibody test; specific the first time but once positive likely will be lifelong positive, short window period of up to 6 weeks

Nontreponemal test (RPR)– semi-quantitative reflection of the activity of the infection based on the reactivity of serum from infected patients to a cardiolipin-cholesterol-lecithin antigen; non-specific (false positives)

Can think of titer as how many times you can dilute as specimen and it still tests positive

How to interpret syphilis testing

Positive nontreponemal/neg treponemal =>

false positive

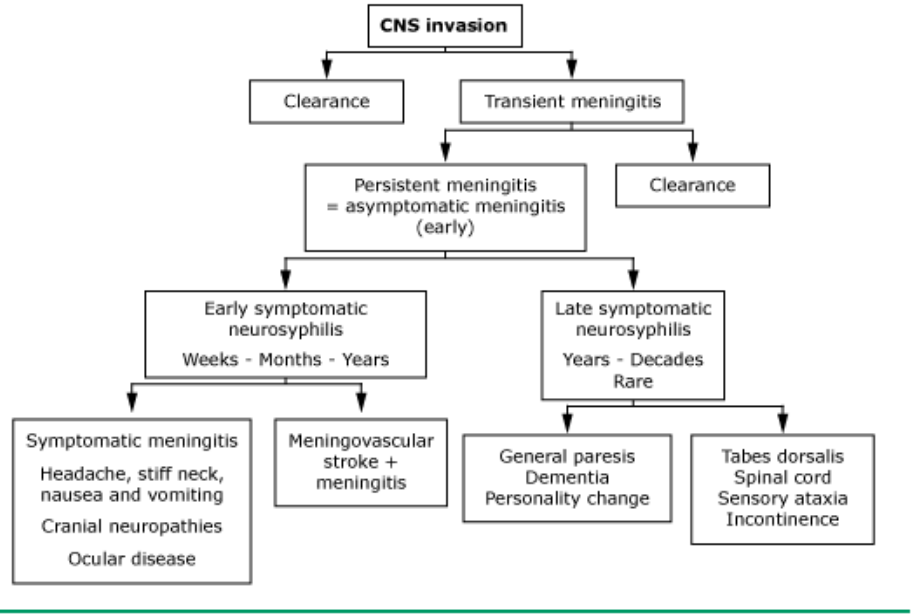
Positive treponemal/neg nontreponemal =>

successfully treated syphilis OR very early/late syphilis vs false positive

Diagnosis

Neurosyphilis = CNS infection of T. pallidum

Natural history of neurosyphilis



CNS: central nervous system.
Courtesy of Christina M. Marra, MD.

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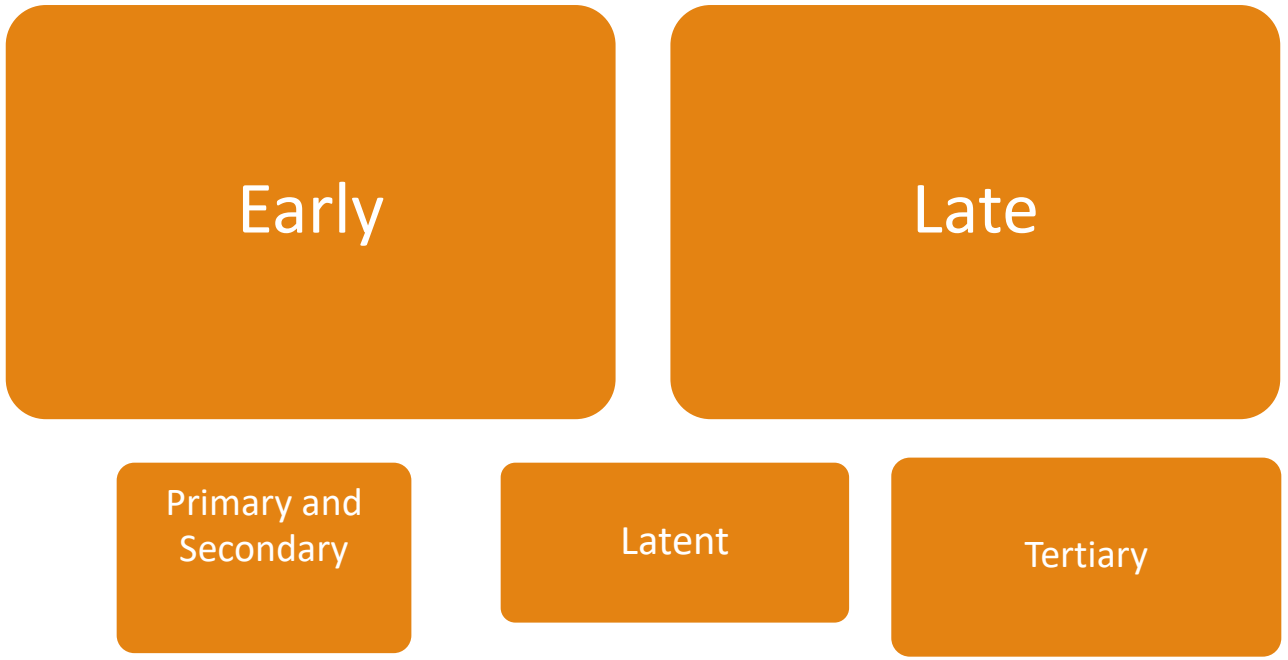
Diagnosis

Classification



Diagnosis

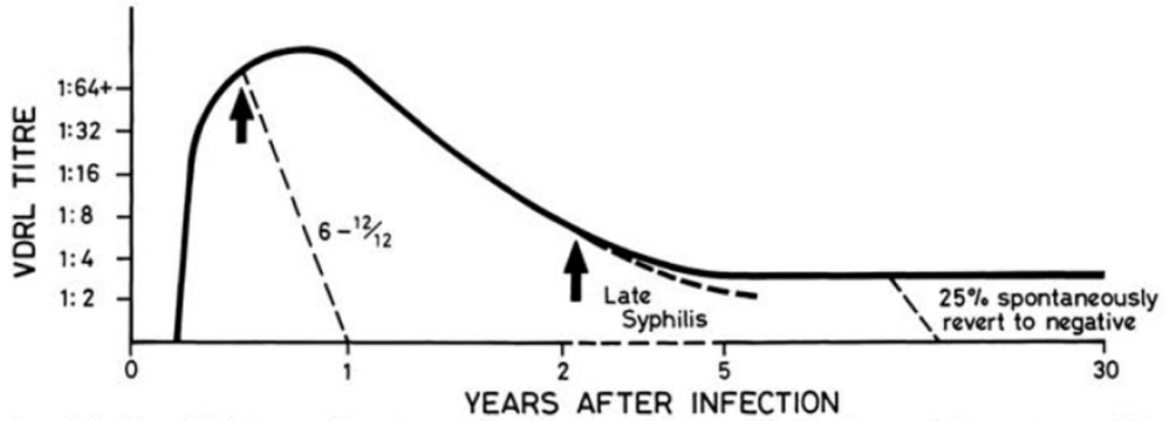


Figure 1. Variation of VDRL (Venereal Disease Research Laboratory test) titer in untreated syphilis. The arrows indicate treatment and the dashed lines show the course after treatment, following infection at time 0. Widespread variation from this simplified generalization may occur.

Laboratory Tests

- Serum
  - Nontreponemal testing = RPR
  - Treponemal testing = “syphilis confirmatory”
- CSF
  - protein and wbc
  - Nontreponemal testing = VDRL
  - Treponemal testing = FTA-ABS

Treatment

Penicillin

- Benzathine penicillin G 2.4M U IM
  - X1 in early syphilis
  - Qweekly x3 in late syphilis
- PCN G 3-4M U IV q4h x 10-14d
- Jarisch-Herxheimer reaction

Treatment

Penicillin allergic patient

- “penicillin allergy” patient
- Desensitization
- Alternatives
  - Doxycycline, azithromycin
  - Ceftriaxone

Take Home Points

Low threshold to treat STDs empirically

There are a lot of asymptomatic STDs and multiple infections at once

Retest at 3mo for gc/ch

Do not send HSV serology to make diagnosis of genital HSV in general population

references

CDC Sexually Transmitted Infectious Treatment Guidelines 2015 and 2021

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