The Rise in Syphilis and the Role of the Emergency Department

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Disclosures/Conflicts of Interest

• None

Case Presentation

• 75 year old woman who presents to ED with progressive left vision loss.
• Symptoms started about 1 month prior, was seen at an outside facility where she was found to have left sided choroidal infarcts on exam – at the time she also endorsed headaches and was found to have elevated inflammatory markers – so the diagnosis of giant cell arteritis (GCA) was made
• Patient was treated with 1 gram IV methylprednisolone, followed by 75 mg daily of prednisone x 1 month (to present)

Case Presentation

• At some point did undergo a temporal artery biopsy, which was negative for findings suggestive of GCA
• Reported that initially visual symptoms improved with steroids, but over the last several days she noticed significant decrease in vision in the left eye
• Ophthalmologic exam was notable for active choroiditis with new uveitis/vitritis in the left eye. Admitted to the hospital for further evaluation
**Case Presentation**

• Further history reveals that the patient currently lives at home by herself in Ohio. She has 2 cats at home and no other animal exposures
• Currently retired (worked in retail in the past)
• No recent travel, no history of any international travel
• Has 2 adult children who live out of state
• No tobacco, alcohol or other drug use
• Not currently sexually active

**Case Presentation**

• Physical exam was unremarkable other evidence of a very faint, healing rash on the trunk and upper arms
• On further questioning, the patient reports that several weeks ago she developed a severe rash over her entire body – went to an urgent care and was diagnosed with a bad allergic reaction. States the rash has been improving slowly over time.

**Case Presentation**

• Patient reported she had a male new sexual partner about 6 months prior, although they are no longer in contact
• Barrier protection used but not every time
• She reports that the prior partner had several other sexual partners (both men and women); she was screened for HIV a few months ago after her partner notified her that he may have had unprotected sexual contact with a person with HIV
• No prior history of gonorrhea, chlamydia, syphilis or HSV

**Case Presentation**

• HIV 1/2 Ab/p24 Ag: Non-reactive
• Urine/oral chlamydia/gonorrhea NAAT: Negative
• Syphilis IgM/IgG: REACTIVE
• RPR: 1:512
• Lumbar puncture: WBC 15, RBC <3, Protein 62, glucose 75
• CSF VDRL: Reactive 1:2
Taking a sexual history

1. Patient
   - "Have you recently been in any new behavior that might be of concern?"
   - "What is the gender of your partner?"

2. Partner
   - "Do you know the results of your partner’s sexual health testing?
   - "Has your partner ever had any health problems due to a sexual encounter?"
   - "Has your partner ever had a sexually transmitted infection (STI) before?"
   - "Has your partner ever had syphilis?"

3. Practice
   - "Do your partners use barrier methods?"
   - "Do you and your partner(s) use condoms?
   - "Do you use or have you used a sexually transmitted infection (STI) vaccine?"
   - "Do you use or have you used any other methods to protect against STI?"

4. Past history of STIs
   - "Have you ever had an STI before?"
   - "Have you ever been diagnosed with HIV?"
   - "Have you ever had any other health problems related to STIs?"

5. Additional questions for identifying HIV and viral hepatitis risk
   - "Have you ever been tested for HIV?"
   - "Have you ever been tested for viral hepatitis?"

6. Prevention from STIs
   - "Do you and your partner(s) use barrier methods?"
   - "Do you use or have you used any other methods to protect against STIs?"

Source: CDC Sexually Transmitted Infections Treatment Guidelines, 2021

Syphilis: a review

- Syphilis is caused by the spirochete *Treponema pallidum*
- Major mode of transmission is via sexual contact
- Vertical transmission can occur (congenital syphilis)
- Can cause a wide variety of clinical manifestations, including periods of clinical latency (asymptomatic) if left untreated

Syphilis: a review

**Primary and Secondary Syphilis — Rates of Reported Cases**

<table>
<thead>
<tr>
<th>Sex, United States, 2010–2019</th>
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<tbody>
<tr>
<td>Rate*</td>
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<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>Men</td>
</tr>
<tr>
<td>Total</td>
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<tr>
<td>Women</td>
</tr>
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</table>

*For 100,000

Source: U.S. Centers for Disease Control and Prevention
Syphilis: a review
Primary and Secondary Syphilis — Distribution of Cases by Sex and Sex of Sex Partners, United States, 2019

Source: U.S. Centers for Disease Control and Prevention

Congenital Syphilis
Congenital Syphilis — Reported Cases by Vital Status and Clinical Signs and Symptoms of Infection, United States, 2015–2019

Source: U.S. Centers for Disease Control and Prevention

Congenital Syphilis

Primary syphilis

- Painless ulcer (chancre) appears at site of inoculation - can go unnoticed depending on the location.
- Regional lymphadenopathy can occur (inguinal, cervical)
- Chancres are highly infectious and may resolve without treatment within 1-6 weeks
Primary syphilis

• Typically occurs about 4-8 weeks after onset of primary chancre, more likely to prompt medical evaluation
• The classic symptom is a diffuse maculopapular rash, which commonly involves the palms, soles, chest and back
• Lymphadenopathy, malaise, fever, mucous patches (genitals, mouth), patchy alopecia, and condyloma lata can occur as well

Secondary syphilis

Source: Negusse Ochamishuf, PA; Public Health—Seattle & King County STD Clinic

Source: Centers for Disease Control and Prevention Public Health Image Library
**Tertiary Syphilis**

- Form of late syphilis – can occur decades after initial infection if treatment is not administered
- Gummatous disease (granulomatous disease of skin, subcutaneous tissues, bones or viscera)
- Cardiovascular syphilis (involvement of vasa vasorum – aortic aneurysm, aortic insufficiency)

**Latent syphilis**

- Early latent syphilis (infection of less than 1 year duration)
- Late latent syphilis (infection greater than 1 year duration)
- Latent syphilis of unknown duration

**Neurosyphilis, ocular syphilis, otosyphilis**

- CNS involvement can occur during any stage of infection
- Early neurosyphilis - cranial nerve dysfunction, meningitis, meningovascular syphilis, stroke and/or acute altered mental status
- Late neurosyphilis – general paresis/tabes dorsalis (less common)
- Ocular syphilis (anterior, posterior or pan-uveitis), can occur with or without other associated neurologic manifestations
- Otosyphilis: usually presents with tinnitus, vertigo, sensorineural hearing loss
Screening for syphilis

- **Laboratory testing** - Reverse sequence algorithm
- **Treponemal specific tests** - Syphilis IgM/IgG, T.pallidum particle agglutination assay (TP-PA)
- **Non-treponemal specific tests** - rapid plasma reagin (RPR)

Diagnosis

- **EIA or CA**
- **TP-PA**
- **Quantitative RPR or VDRL**
- **Syphilis (past or present)**
- **Syphilis unlikely**

Source: CDC Sexually Transmitted Infections Treatment Guidelines, 2021
### Treatment

- **Late syphilis** (late latent syphilis, latent syphilis of unknown duration, tertiary syphilis if CNS disease excluded): 2.4 million units Benzathine penicillin G IM weekly x 3 doses
  - Alternative for penicillin allergic, non-pregnant adults: doxycycline 100 mg twice daily x 28 days

- **Neurosyphilis**: Aqueous crystalline penicillin G 18-24 million units per day, administered as 3-4 MU IV every 4 hours or continuous infusion given for 10-14 days
  - Alternative procaine penicillin G 2.4 million units IM once daily plus probenecid 500 mg orally 4 times/day for 10-14 days

### Other treatment considerations

- All people with syphilis should be screened for HIV
- Syphilis exposure has been associated with an increased risk of future HIV acquisition, particularly in men-counseling on safer sex practices and HIV Pre-Exposure Prophylaxis (PrEP)
- Sexual partners should be treated

### References

Syphilis and co-existent sexually transmitted diseases

Syphilis re-infection?

Background
National Data

- Sexually transmitted infections are on the rise
- Syphilis
  - 35,063 new cases since 2014, 71% increase
  - Several demographics have shown increased case numbers
  - Gonorrhea and syphilis increase the likelihood of transmission of HIV
**STI testing in Urban Emergency Departments**

**Ideal Population**

- Indigent population
- Uninsured
- No Primary Care
- ED is point of healthcare access
- High risk populations:
  - Minorities
  - Transient/homeless
  - IVDU
  - prostitution
  - multiple partners with diverse sexual orientation
- Perfect opportunity to screen for syphilis in a population that is under tested and under treated

**Franklin County**

- Ranks 21st amongst counties in nation in number of new cases of syphilis
- Half of all new cases of syphilis in just 28 counties nationally
  - Less than 1% counties nationwide
- One of 48 counties identified nationally as HIV hot spot

**Primary and Secondary Syphilis — Rates of Reported Cases by State and Territory, United States, 2018**

**Emergency department visits: trends**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>NUMBER OF VISITS PER 100,000</th>
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**Source:** CDC
Why didn’t we do this sooner?

- Practitioners unaware of syphilis surge
- Who is responsible for follow-up on these results?
- Interpretation of results
- Tracking patients down
- Collaboration with outpatient clinics
- Linkage to care and initiation of PrEP
- Insurance coverage: US Preventative Services Task Force – Medicaid mostly cover routine screening or “medically necessary” testing

Source: CDC

The test has been there. Why aren’t you ordering it?

- Survey of all EM faculty, residents, NPs at OSU Main and East
- Questions address hesitation to ordering HIV/syphilis testing from ED

Source: CDC
I didn't remember to discuss screening guidelines. I am not familiar with screening guidelines. I do not believe in screening high risk patients in the ED setting. I am not sure of the specific tests that must be ordered. I do not want to be liable if the test is positive. Other.

**Solution: Guarantee follow-up outside the ED**

- ID generated list daily
  - All patients tested for HIV/syphilis and their results
- Interpretation of results
- Contacting patient
  - CPH and ODH help
- Arranging for treatment or continued surveillance
- PrEP
- STI ID Attending on call pager on WebExchange

**ED STI Protocol Management of STIs**

- Patient examination:
  - Previous STIs including HIV status, barrier protection, use of partners, number of partners, rectal, oral, vaginal intercourse

  **STI orders:**
  - Female:
    - gonorrhea and chlamydia (urinal)
    - Affirm (vaginitis, yeast, trich)
    - Syphilis (STAT not next day lab)
    - Rapid HIV (blood)
  - Male:
    - gonorrhea and chlamydia (urinal and rectal)
    - Urine rectal (trich)
    - Syphilis (STAT not next day lab)
    - Rapid HIV (blood)
**ED STI Protocol**

**Management of STIs**

May provide presumptive treatment for gonorrhea and chlamydia based upon history, exam, and/or high-risk status while in the ED.

If HIV or syphilis is notifiable, notification will be sent to Infectious Disease and the health department for follow up (by lab, not the ED provider). ED will then contact the patient regarding treatment options/locations, follow up, and PEP initiation for high-risk patients.

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**ED protocol**

- **STI-related complaint/Concern for STI based on clinical presentation**
  - History
    - Number sexual partners
    - Known HIV or syphilis diagnosis?
    - Barrier methods used
    - Sexual contact
      - Need for oral, rectal, and/or vaginal swabs
  - Test for GC/Chlamydia (oral, urine, rectal, urethral, vaginal swabs), HIV (serum), syphilis (serum)
  - Rapid HIV, with p24 antigen and syphilis AB with reflex RPR

Source: CDC

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**ED Order Set**

**Update:** Rapid Gonorrhea and Chlamydia testing now available. ALSO added pregnancy test and UA to streamline ordering

**Dosing has been changed**

Source: CDC
Data since initiation of project

- Gonorrhea
- Chlamydia
- Syphilis
- HIV
- Comprehensive

Number of tests ordered

Source: CDC

HIV and syphilis tests ordered from OSU EDs

STI Testing in the OSU East Emergency Department 2012-2017

SYPHILIS

- Between Nov 1 2018 and Nov 30 2019 there were 57 positive syphilis antibody tests
  - 24 positive tests in women
  - 33 positive tests in men
- Totals:
  - 27/57 Previously treated infections
  - 19/57 Late latent infections (6 fully treated, 4 partially treated, 9 untreated)
  - 2/57 Secondary syphilis (2 fully treated)
  - 1/57 Primary syphilis (1 fully treated)
  - 8/57 false positives
  - 16 positive and/or inadequately treated cases found
- 1% of those tested had a positive result and inadequate/no treatment

Source: CDC
Moving Forward

- Protocol for STI testing in EDs nationally
- Exemplar of interdepartmental collaboration with OSU Infectious Disease and collaboration with Columbus Public Health
- Model for quick linkage to care and initiation of PrEP
  - PrEP can reduce risk of HIV acquisition through sex by 90%
  - Navigators in ED who will assist patients with LTC and PrEP
- Social Work resources
- Nurse case manager, establish primary care

Source: CDC

Goals

- PrEP referral in STI order set to specific sites
  - ID clinic, THW, FACES, Equitas, primary care, patient choice
- HPV vaccine in appropriate patients
- Introduce model to other area healthcare systems
- Retrospective analysis of how early detection/treatment of HIV reduces number of ED visits/year
- Study demographics of patient populations being tested
  - Visits to ED/year
  - Race
  - Age
  - Gender
  - Sexual Orientation
  - Insurance status

Source: CDC