Sexually Transmitted Infections and Child Sexual Abuse: A Case Based Discussion

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Disclosure

We have no conflicts to disclose.

Objectives

- Diagnose and treat sexually transmitted infections (STIs) in young children and adolescents.
- Interpret STIs in the context of possible child sexual abuse.

When to Test

The CDC suggests that STI testing in pre-pubertal children be considered when:

- Child has experienced penetration of the vagina or anus.
- Child has been abused by a stranger.
- Child has been abused by a perpetrator known to be infected with an STI or is at high risk for being infected (IV drug users, men who have sex with men, multiple sexual partners, prison history).
- Child has a sibling or other relative in the household with an STI.
- Child lives in an area with a high rate of STI in the community.
- Child has signs or symptoms of an STI.
- Child has already been diagnosed with one STI.

- A minority of pre-pubertal victims test positive.
- The prevalence of STIs in the general adolescent population is high enough to recommend testing for all patients.

Case

- A 15 year-old female presents to the ED with abdominal pain and malodorous yellow-green discharge after sexual assault 3 weeks prior. She is unsure of onset but the symptoms recently worsened.
- This is the initial disclosure and her first sexual encounter.
- Urine NAAT for gonorrhea and chlamydia were sent.
- Additional serum testing: HIV, Syphilis, Hep B and C (negative)

Case

- Physical exam shows:

- + cervical motion tenderness

Case

- She is treated for PID with a regimen of a single dose of Ceftriaxone and 14 days of Doxycycline.
- She is discharged home with CAC follow up in 1 week.

Case

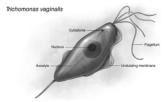
- 2 days later patient presents again to the ED for worsening symptoms despite compliance with treatment.
- Previous urine NAAT was negative.

Case

- Repeat physical exam shows:

Trichomoniasis

- Caused by T. vaginalis, an anaerobic, flagellated protozoan parasite
- 80% of patients are asymptomatic
- Females: profuse, yellowish greenish, malodorous vaginal discharge with vulvar irritation. Exam may reveal a “strawberry cervix”
- Males: urethritis, epididymitis, or prostatitis



Trichomoniasis Mode of Transmission

- Primarily sexually transmitted
  - Women can acquire from both men and women.
  - Men can acquire from women and do not usually transmit to other men.
- Can occur during delivery: found in 2-17% of infants with infected mothers
- Transmission by fomites not proven
- Incubation period: varies (5-28 days)

Trichomonas Testing in Pre-Pubertal Children

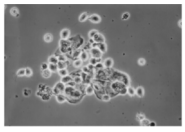


Figure 2. Wet prep photomicrograph shows several *Trichomonas vaginalis* protozoan parasites, oval in shape with thin flagella. (Reprinted with permission from the Centers for Disease Control and Prevention's Public Health Image Library. Source of original image: Joe Millar, 1975.)

- Culture for *T. vaginalis* infection and wet mount of a vaginal swab specimen (for both symptomatic and non-symptomatic children) as there is benefit from treatment if positive.
- Data on use of NAAT for detection of *T. vaginalis* in children is too limited to inform recommendations, but no evidence suggests that performance of NAAT for detection of *T. vaginalis* in children would differ from that in adults.

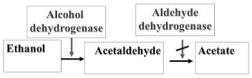
Trichomonas Testing in Adolescents and Adults

- NAATs from a urine or vaginal specimen or point-of-care testing (i.e., DNA probes) from a vaginal specimen for T. vaginalis
  - Most sensitive/specific NAAT test is the FDA approved APTIMA T vaginalis assay (sensitivity, 95.3%–100%; specificity, 95.2% – 100%)
  - POC ex OSOM rapid antigen detection test which is sensitive (84%) and specific (99%) and gives results in 10 minutes. Cannot be used in males.
- Wet Mount: Swabs of vulvar or vaginal mucosa/secretion to visualize motile trichomonads which is diagnostic. Observer dependent with sensitivity of only 51-65%

Trichomonas Treatment

- Weight <45 kg: Metronidazole 45 mg/kg per day orally divided into 3 doses daily for 7 days, not to exceed 2 g/day
- Weight ≥ 45 kg: Metronidazole 2 g oral in a single dose OR tinidazole 2 g oral in a single dose

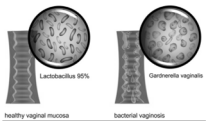
Be sure to counsel patients and family regarding the disulfiram-like reaction that occurs from the interaction between metronidazole and alcohol (headaches, cramps, nausea, vomiting, flushing)



T. vaginalis can promote growth of anaerobic bacteria, and can thus occur simultaneously with Bacterial Vaginosis.

Bacterial Vaginosis

- Caused by an overgrowth of BV-associated bacteria, the anaerobic bacteria that replace the normal flora (lactobacilli) of the vagina
  - Gardnerella vaginalis, Atopobium vaginae, Mycoplasma hominis, Ureaplasma species
- Most women with BV are asymptomatic. Approximately 50% present with a white, homogenous discharge with a fishy odor.

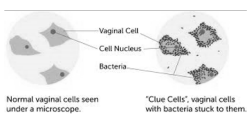


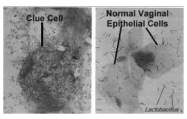
Bacterial Vaginosis: Mode of Transmission

- Not typically classified as an STI, but is associated with sexual activity
- Presence of BV in a child is not indicative of sexual abuse
- Bacterial imbalance caused by: having multiple sex partners or a new partner, douching, natural lack of lactobacilli bacteria

Bacterial Vaginosis

- Amsel Criteria: need 3 of the following 4 symptoms/signs
  1. homogeneous, thin, white discharge
  2. presence of clue cells on microscopic examination of a NS slide of vaginal secretions
  3. vaginal pH > 4.5
  4. presence of a fishy odor that develops after KOH "Whiff Test"





Bacterial Vaginosis Testing

- Wet Mount with 10% KOH/pH strip: clue cells, amine odor, pH>4.5
- Gram Stain with Nugent Score
  - 1 to 10 scoring system to determine the proportion of normal flora lactobacilli to BV associated bacteria (score 7-10 is diagnostic)
- Recently approved PCR test BD MAX vaginal panel test detects different causes of vaginitis (BV, Candida)
  - Sensitivity and specificity of 89.8% and 96.5%, for the detection of BV

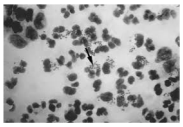
Bacterial Vaginosis Treatment

- Weight <45 kg: Metronidazole 12-25 mg/kg per day orally divided into 3 doses daily for 7 days, not to exceed 2 g/day
- Weight ≥ 45 kg: Metronidazole, 500 mg, orally, twice daily for 7 days
  OR Metronidazole gel 0.75%, 5 g, intravaginally, daily for 5 days
  OR Clindamycin cream 2%, 5 g, intravaginally at bedtime, for 7 days

Case

- 5 year old female presents to PMD with profuse yellow-white vaginal discharge
  - UA in office suggestive of UTI
  - Genital NAAT 2 days later positive for gonorrhea (with positive confirmation)
- Live-in aunt who recently had unprotected consensual sex with a new boyfriend also positive for gonorrhea
- Mother believes a shared shower loofah was the mode of transmission

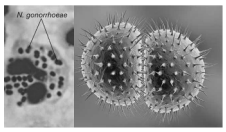
Neisseria Gonorrhea



- Gram-negative diplococcus
- Pre-pubertal girls: vaginitis
- Women: Often **asymptomatic** but may present with cervicitis or urethritis. Complications: infection/abscesses in the accessory glands (Skene or Bartholin), PID, or perihepatitis
- Men: Often **symptomatic**, presenting with urethritis, dysuria, proctitis. Complications- epididymitis, prostatitis, and perirectal abscess
- Other manifestations: Ocular infections, pharyngeal infections, and disseminated infections

Neisseria Gonorrhea Mode of Transmission

- Occurs via direct contact with secretions from infected mucosal tissues
- Transmitted sexually by penile-vaginal intercourse, oral-genital contact, and anal intercourse and perinatally at the time of vaginal delivery
- Incubation period: 2-7 days



Fomite or Non-Sexual Transmission?

› Arch Dis Child. 2011 Mar;96(3):247-51. doi: 10.1136/adc.2009.162909. Epub 2010 Jun 3.

Genital gonorrhoea in children: determining the source and mode of infection

S Whaitiri [1], P Kelly

Conclusion: Thorough review and contact tracing of pre-pubertal children with genital gonorrhoea found that sexual abuse could be determined as the mode of transmission for at least 40% of children. Although our sample size was limited, we found no case where non-sexual transmission could be determined.

Fomite or Non-Sexual Transmission?

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www.elsevier.com/jflm

Review

What is the evidence for non-sexual transmission of gonorrhoea in children after the neonatal period? A systematic review

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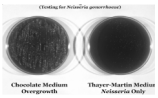
The literature regarding possible non-sexual transmission through contact with infected household members and from towels, bedding and clothing, particularly likely to occur under conditions of over-crowding and poor hygiene, is weaker evidence. It may not be possible to determine whether the infection was spread through sexual abuse or through non-sexual means in household situations. However the bulk of this evidence suggests that this does occur on occasions, particularly when there is conjunctivitis because this is unlikely to be sexually transmitted and more likely to be through infected hands or fomites.

Neisseria Gonorrhea Testing in Pre-Pubertal Children

- Culture from specimens collected from the pharynx and anus in boys and girls, the vagina in girls, and the urethra in boys
- Specimens should be streaked onto selective media for isolation of N. gonorrhoeae



Neisseria Gonorrhea Testing in Pre-Pubertal Children (Continued)

- Data on use of NAAT for detection of N. gonorrhoeae in children are limited, and performance is test dependent.
- NAAT can be used as an alternative to culture when testing vaginal secretions or urine from girls. Culture remains the preferred method for testing urethral specimens or urine from boys and extragenital specimens (pharynx and rectum) from all children.
- All positive specimens should be retained for additional testing.

Neisseria Gonorrhea Testing in Adolescents and Adults

NAATs for N. gonorrhea at the sites of penetration or attempted penetration is preferred for the diagnostic evaluation.

Neisseria Gonorrhea Treatment

Uncomplicated infections of the cervix, urethra, and rectum

- Weight <45 kg:
  - Urethritis - Ceftriaxone 125 mg IM once
    - + either Azithromycin, 60/mg/kg, orally once, max of 1 g OR Erythromycin 50 mg/kg per day, orally, in 4 divided doses (maximum 2 g/day) for 14 days
  - Pre-pubertal Vaginitis - Ceftriaxone 25 – 50 mg/kg IV or IM once, max 125 mg, IM, in a single dose
- Weight ≥ 45 kg: Ceftriaxone, 250 mg, IM, in a single dose
  - + either Azithromycin 1 g orally, once OR Doxycycline 100 mg orally, 2x day for 7 days

A Tale of Two Teens -Teen One

- AB - a 12-1/2 year old girl evaluated for possible sexual activity with older partners and possible trafficking
- Never disclosed any sexual activity
- Initial test results:
  - urine and rectal NAATs + for GC/Chlamydia
  - throat + for GC
- Received 250 mg Ceftriaxone, 1000 mg of azithromycin
- "Test of cure" showed + rectal chlamydia

Teen Two

- CD - a 15 year old suspected of sexual activity with older partner(s)
- Disclosed sexual assault
- Social media evidence suggested other possible sexual activity
- Initial test results:
  - + throat GC
  - + rectal Chlamydia
- "Test of cure" showed + rectal chlamydia
- Received 250 mg Ceftriaxone, 1000 mg Azithromycin

Chlamydia

- Most common bacterial Sexually Transmitted Infection
- Intracellular organism, requiring different types of diagnosis and treatment compared with "typical" bacterial infections
- Sites of infection from sexual activity are genital, rectal and oral (in order of prevalence)
- Often asymptomatic
- Old "gold standard" testing was via tissue culture but now most programs use NAAT testing
- Treatment requires an antibiotic that will stay in the cells for 36-48 hours, making treatment options limited

Treatment Options

- Azithromycin: 1000 mg as a single oral dose
- Doxycycline: 100 mg twice daily for 7 days
- Ofloxacin: 300 mg twice daily for 10 days
- Levofloxacin: 500 mg daily for 10 days
- Erythromycin can also be used-various preparations, doses and regimens. Amoxicillin can also be used but may be much less effective
- Only Azithromycin or Amoxicillin are recommended during pregnancy

Test of Cure

- Recommended for patients who take erythromycin or amoxicillin
- Often done in cases of suspected child sexual abuse
- May be a problem determining optimal timing (when NAATs are used)
- May be hard to distinguish between re-infection and treatment failure if test results remain positive
- Selecting treatment for these cases is difficult
- The CDC website lists options (I also consulted local experts)
- I opted for Azithromycin, 1000 mg given once/week for three weeks
- All other options would be for daily treatment for 7-10 days
- Results on my patients
  - AB passed her second test of cure
  - CD results are pending

What did we learn?

- Rectal Chlamydia may be hard to treat.
- Chlamydia has not been reported to be resistant to azithromycin or doxycycline but it can "set up camp" in the GI tract and may require a longer course of treatment.
- Due to compliance concerns we opted for longer course of azithromycin - 1000 mg orally once/week for 3 weeks.
- Testing from the anal area and tests of cure may be important parts of the medical evaluation in child sexual abuse programs.

Case

- You receive a consult for a 5 year old female who presents with a painful rash in her vaginal area and difficulty urinating. She disclosed that her father touched her with his penis "down there."
- Her exam:

- What is your clinical impression?
  - Herpes
- Testing?
  - Culture: HSV-2 (can also do PCR)
  - HSV-1, HSV-2 antibody: negative
  - Gonorrhea/Chlamydia, Syphilis, HIV all negative
- Treatment?
  - Primary episode - Acyclovir 400mg po TID x 7-10 days (Valacyclovir and Famiciclovir have less frequent dosing but are not more effective.)

Genital Herpes

- Herpes simplex virus type 1 : >50% of genital infections, also HSV-2
- Both HSV-1 and HSV-2 are acquired by contact with infected oral or genital secretions

Human Papilloma Virus

- 3 year old female who is seen by her pediatrician and found to have anal condyloma which start a few weeks before the visit.
- History:
  - Caregivers mother is primary, no school or daycare
  - Maternal history of condyloma or an abnormal Pap Smear – negative per mother
- Treatment:
  - Goal is to remove lesions, not to attempt to eradicate the virus
  - Patient applied: Imiquimod, Podofilox, Sinecatechins
  - Physician applied: Excision, Cryosurgery, Trichloroacetic acid (TCA) or bichloroacetic acid (BCA) 80%–90% solution

Human Papilloma Virus

- Double-stranded DNA virus
- Variable incubation period: 1-20+ months with average 2-3 months
- 90% of anogenital warts due to nononcogenic HPV types 6,11

Human Papilloma Virus

Is testing for HPV needed in this case?

- No, HPV can be diagnosed through clinical inspection.

HPV and Child Sexual Abuse

STI/SA confirmed	Evidence for sexual abuse	Suggested action
Gonorrhea*	Diagnostic	Report†
Syphilis*	Diagnostic	Report†
HIV	Diagnostic	Report†
*Chlamydia trachomatis**	Diagnostic	Report†
*Trichomonas vaginalis**	Highly suspicious	Report†
Genital herpes	Highly suspicious (HSV-2 especially)	Report†¶
Condylomata acuminata (anogenital warts)¶	Suspicious	Consider report†¶,**
Bacterial vaginosis	Inconclusive	Medical follow-up

Source: Adapted from Kellogg N, American Academy of Pediatrics Committee on Child Abuse and Neglect. The evaluation of child abuse in children. Pediatrics 2005;116:506–12.

Abbreviations: HIV = human immunodeficiency virus; SA = sexually associated; ST = sexually transmitted.

* If not likely to be perinatally acquired and rare vertical transmission is excluded.

† Reports should be made to the agency in the community mandated to receive reports of suspected child abuse or neglect.

¶ If not likely to be acquired perinatally or through transfusion.

** Unless a clear history of autoinoculation exists.

Syphilis

- Prevalence in sexually abused children: unknown
- Stages:
  1. Incubation – average 3 weeks with range of 10 - 90 days
  2. Primary – clinical appearance of chancre and regional adenopathy
  3. Secondary – 6 weeks after chancre, presents with constitutional sx's, rash, condyloma lata
  4. Latency – early and late (>1 year)
  5. Tertiary – (not common in adolescents) gummas, cardiovascular, neurological

Tests For Syphilis

- Darkfield microscopy to identify spirochetes
- Serological studies
  - Nontreponemal tests: VDRL, RPR
  - Biologic false-positives: usually < 1:8, other treponemal diseases, autoimmune diseases, pregnancy, certain viral illness (e.g., EBV, Varicella)
    - False negative: early primary, latent of long duration, and late congenital syphilis
  - Treponemal tests: FTA-ABS, TP-PA, TP-EIA, TP-CIA

Treatment of Syphilis

- Parenteral penicillin
- Penicillin allergy:
  - Pregnancy, neurosyphilis, and congenital syphilis: give penicillin after sensitization
  - Doxycycline for nonpregnant patients with close follow-up

Hepatitis B

When to test:

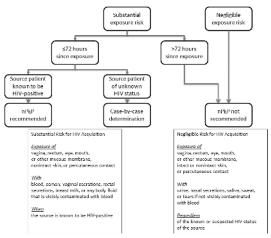
- Child has experienced penetration or has evidence of recent or healed penetrative injury to the genitals, anus, or oropharynx.
- Child has been abused by a stranger.
- Child has been abused by a perpetrator known to be infected with an STD or at high risk for STDs (e.g., intravenous drug abusers, MSM, persons with multiple sexual partners, and those with a history of STDs).
- Child has a sibling, other relative, or another person in the household with an STD.
- Child lives in an area with a high rate of STD in the community.
- Child has signs or symptoms of STDs (e.g., vaginal discharge or pain, genital itching or odor, urinary symptoms, and genital lesions or ulcers).
- Child or parent requests STD testing.

Hepatitis B

- Prophylaxis:
  - Contact with a HepBsAg+ person: HBIG and vaccine if unimmunized, booster Hep B vaccine if immunized
  - Contact with HepBsAg unknown: Start vaccine series if unimmunized, and no prophylaxis if immunized
  - Begin prophylaxis within 24 hrs after contact

HIV

- When to test:
  - Baseline sample in adolescents after sexual assault
  - In children after sexual abuse on a case by case basis
- When to give prophylaxis:
  - Assess risk: CDC. Antiretroviral post exposure prophylaxis after sexual, injection-drug use, or other nonoccupational exposure to HIV in the United States. MMWR Recomm Rep 2005;54(No. RR-02):1–20



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Prophylaxis

- Presumptive/prophylactic treatment for **child victims** of sexual abuse is not recommended because their incidence of STIs is low, the risk of spread to the upper genital tract in pre-pubertal girls is low, and follow-up usually can be ensured.
- In **adolescent victims** an empiric regimen to prevent chlamydia, gonorrhea, and trichomonas is recommended:
    1. Ceftriaxone, 250 mg, intramuscularly, in a single dose
    2. Azithromycin, 1 g, orally, once
    3. Metronidazole, 2 g, orally, once OR Tinidazole, 2 g, orally, once

Serologic Testing Follow-up After Sexual Abuse/Assault

- Syphilis and HIV testing at 4-6 weeks and 3 months post assault

https://www.cdc.gov/std/tg2015/sexual-assault.htm

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