SEXUALLY TRANSMITTED DISEASES IN ADOLESCENTS:
A FOCUS ON PREVENTION AND SCREENING

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Family Medicine Clinic Rotation
David Geffen SOM at UCLA
ID: EH is a 16 y/o female at Gardena High School clinic

CC: cough/cold, sore throat, left ear pain 4/10

HPI: EH c/o 5 day hx of cough and sore throat that gradually became worse over the weekend. On Mon (day 3) EH noticed some left ear pain and fever to 102°, but states the left ear pain has resolved. EH is currently taking Tylenol cold for her symptoms with some relief. Pt says that today she is feeling much better w/ only mild discomfort from her sore throat. EH describes her cough as dry, denies sputum production. EH denies any SOB, wheezing, muscle aches, fatigue, nausea or vomiting. Pt denies any hx of asthma, allergies, or pneumonia. She states she often gets ear pain when she has a cold that usually resolves on its own. No sick contacts at home or school.

Pt also c/o vaginal itching, discharge, and dysuria. EH denies fever, hematuria, frequency, or lower quadrant pain. EH states her last sexual encounter was in January with her partner of two years. She is currently not using any form of contraception or STD protection. She used OCP in the past but stopped because she “didn’t like it”. She states that her and her partner occasionally use a condom when engaging in sexual intercourse. Her LMP was 12/31/02. EH never has been tested for STD in the past and never has had a vaginal or Pap exam. STD/contraception pre-counseling done

PMH: Anemia

Allergies: none

Meds: Tylenol cold

PE: vitals- T: 98.4 BP: 114/66 P: 96 wt: 158.5
Gen: NAD, A/o x3
HEENT: throat clear, no exudates or erythema, uvula normal
Nasal turbinates with minimal clear mucous, no erythema or edema
TM intact bilaterally, no erythema/ bleeding, + light reflex, + bony landmarks
Eyes clear no conjunctiva or urticaria
Neck: supple, no lymphadenopathy
Resp: CTAB, no wheezes or rales
Vag: external labia minora w/ erythema, TTP, no lesions, masses, or bleeding
Wall- pink mucosa, no bleeding, white cheesy discharge in vault
Cervix- no discharge, non-erythematous, no bleeding
Ovaries- no CMT, no adenexal masses
Labs:
Urine dip: - leukocytes, - nitrites,
Pap done
ICON: -
Wet mount: some WBC, no clue cells, no flagellated organisms, or budding hypae

A: 16 y/o sexually active female with viral URI and vaginitis likely candida, however cannot rule r/o UTI, high risk for pregnancy and other STDs.

P:
1. Diflucan 150 mg po x1 for candida infection, if sx unresolved RTC for further evaluation
2. Wet mount sent
3. formal U/A and culture sent to r/o UTI
4. STD/contraception counseling: partner to get checked, condom use
5. G/C & chlamydia vaginal culture sent
6. HIV precounseling done
7. HIV, RPR, Hep panel sent
8. Depot 150 mg IM with pre-counseling
9. Symptomatic tx URI w/ Robitussin DM, Sudafed, Ibuprofen
10. RTC in 1 week for: f/u STD tests, tx f/u for vaginitis, further counseling

Pertinent Results of subsequent labs:
Urine culture: greater than 100,000 G+ cocci
HIV antibody: non-reactive
RPR antibody: non-reactive
Hep acute panel: negative
Chlamydia and G/C pending
Pap pending

CC: pt here for f/u tests + c/o suprapubic pain
HPI: c/o suprapubic discomfort, worse with urination for 1 week duration; no fevers, hematuria, or back pain; vaginal itching and discharge has resolved.

PE: deferred

U/A: - leuk/nitrite

A/P:
1. STD- screening results reviewed w/ patient. Partner encouraged to get checked. HIV post counseling done
2. UTI- will empirically treat given culture + but repeat urine negative, reserved formal U/A
   Treat w/ Keflex 500 mg QID x 3days
3. Contraceptive management- cont. depo. no active issues
4. F/U: RTC in symptoms not improved; will notify for results of pending labs

Subsequent results:
Chlamydia culture positive
Gonorrhea culture negative
Pap pending

CC: pt summoned for STD results
HPI: pt informed of + chlamydia, no suprapubic pain, or dysuria;
Pt reports no sexual intercourse since initial visit, partner has not been tested as of yet, he says he has no where to go to get tested

PE: deferred

A/P: 16 y/o female with chlamydia, at high risk for reinfection after treatment
- Azithromycin 1 g PO x 1 in clinic
- Post counseling for STD infection: again encouraged her to discuss testing with partner, no sexual contact for 1 week, consistent condom use
- Make an appointment for partner to get treated here
- Return to clinic for test of cure and f/u in 3 weeks

Analysis of encounter: a focus on STD

History
I feel the history I took was appropriate for the chief complaint of cough and sore throat. It was fairly apparent from the history that the student had a viral URI. I believe, however, this was an “excuse” by the student to leave the classroom and be seen at the clinic without being embarrassed that the teacher, fellow students, or clinic staff would think or find out about her sexually activity. EH did not reveal her symptoms of vaginal itching and discharge until the very end of the visit when I asked her if there was anything else I could do for her. I think at this point EH felt comfortable enough with me to ask about her symptoms. It took me by surprise because my thought process wasn’t even on STD but was in evaluating her chief complaint of cough and sore throat. I relearned, how vital it is to ask about sexual activity in all adolescents regardless of the purpose of the clinic visit.

A complete and non-judgmental sexual history is essential in evaluating any adolescent who is seen in a clinic visit. I have since asked every student who came in to the Gardena high school clinic about his or her sexual activity (and other HEADS assessment). I found that if I don’t ask, the students are often embarrassed to ask. Taking a sexual history has resulted in many STD testing and initiating Depot-Provera for contraception to the female students. When the topic is opened, students are interested
and interactive. Most adolescents are preoccupied with body images, self and sexual identity that they are both curious as well as embarrassed to discuss these issues with an adult.

In the case of EH I could have asked more detail about her sexual history. For example, I could have asked questions to get a better understanding of her relationship with her boyfriend, in particular the power dynamic in the relationship. I think I would have been able to learn earlier how difficult is was going to be for her to speak with and convince her partner to get testing and treated.

Physical Exam

I believe the physical exam was appropriate to make the diagnosis of vaginitis and to screen for STDs. Vaginitis is diagnosed by wet mount in order to differentiate the various causes of vulvar itching. It would not be appropriate to treat empirically without doing a speculum exam to obtain a sample for wet mount. With the EH’s history of recent unprotected sexual activity this was an excellent opportunity to screen for other STDs. Adolescent are at an increase risk for STDs due mainly in part that adolescents are more likely to have unprotected sex and more likely to have multiple sequential partners over a short period of time (1, 3, 4). It is argued that adolescent females have other biologic factors that place them at higher risks of STDs than older females. In adolescent females the cervical ectropion (squamocolumnar junction) is on the exocervix exposed to the environment; leaving them more susceptible to infections.

A PAP smear was done to screen for cervical abnormalities caused by HPV infections. Studies have shown rates of approximately 15% to 57% infection of HPV in adolescents (1). The squamocolumnar junction is the area where cervical cancer originates. In adolescents this area is actively undergoing squamous metaplasia. It is argued that HPV may be incorporated during cell replication, making adolescent more susceptible to the manifestations of HPV infection (1). Abnormal PAP smears have been found in 3% to 17% of the adolescents (1).

G/C and chlamydia cultures where sent to r/o these diseases. Chlamydia infection is the most prevalent STD in the U.S. with more than 0.5 million cases reported in 1997. The rates of infection are highest among individuals younger than 20. Reported prevalence among teenage girls is 10% and among teenage boys 5% (3). The majority of infected patients cannot be distinguished from non-infected patients on clinical examination alone. Many young females are asymptomatic, screening for asymptomatic patients at risk for chlamydia (G/C) should be done routinely for diagnosis and treatment of these infections. Patients who present with symptoms usually complain of dysuria, urinary frequency, and pyuria (EH’s only complaint was dysuria). Dysuria for more than 7-10 days, without hematuria or suprapubic tenderness suggests chlamydia infection (3). Patients may have a mucopurulent vaginal discharge and easy cervical bleeding. Urine dip is usually + for leukocytes and negative for nitrates and heme. If EH had presented with a positive history of unprotected sex, but was asymptomatic I would have opted for a urine test for GC/chlamydia. The urine ligase chain reaction (LCR) and PCR testing can be used for cervical, urethral, and urine specimens from men and women. The sensitivity of LCR and PCR have consistently been above 99% (3). Urine based testing is much less threatening to adolescents and opens up the possibility to more extensive screening and treatment.
There are many STDs that should be ruled out when evaluating someone who has had unprotected sex. Unfortunately an extensive discussion of all possible STD’s is beyond the topic of this paper. I will only briefly mention the screening test for the most common and most severe STD that should be done with every asymptomatic patient who has had unprotected sex. HIV, RPR, and Hep B panel are all blood tests that should be done in every patient and are easily screened for. As we are aware it is important to provide pretest counseling to patients for every test ordered, but it is especially significant when testing for HIV, and in particularly in the adolescent patient. Please refer to the current recommendations for screening and treatment of STDs for specifics on other STDs (8).

Tx and management and follow up:
I believe we chose adequate treatment for vaginitis. The recommended treatment for candida infection is Diflucan 150 mg PO x 1. This regimen is particularly easy for adolescent who can take it in the clinic before they leave. The patient’s subsequent UTI was adequately treated with Keflex. At initial presentation she may have had a UTI, however the urine dip showed negative nitrites and leukocytes and symptoms at presentation didn’t suggest a UTI. However, since many of the symptoms of vaginitis and chlamydia are similar to UTI it could not be entirely ruled out so sending a urine culture was a good plan. It also facilitated the diagnoses at her second presentation because we already had the results of a formal culture. At second presentation the urine dip was again negative for nitrites. We know the culture was positive for Gram + organisms however gram + organisms wouldn’t produce nitrites, so this was consistent with the urine dip. Her positive clinical symptoms of suprapubic pain and dysuria along with the + culture made the diagnosis of UTI.

The recommended treatment for Chlamydia is 1g Azithromycin PO x 1 or doxycycline100mg BID x7 days. Although Azithromycin is more expensive it is the treatment of choice in the adolescent population. This treatment is simple; the patient can take it while in the office. A test of cure is not necessary unless symptoms persist or the history is suggestive of reinfection. At the clinic I believe a test of cure at least 3 weeks after treatment is useful to detect reinfection since adolescents are more susceptible to reinfection. It also provides the clinician another opportunity to follow up on any issues pertinent to the patient’s case. Patients should be counseled to refrain from sexual intercourse for 1 week after treatment to prevent spreading the infection to her partner. Also, patients should be encouraged to ask that their partner get testing himself. This was done several times during the visits, however with adolescents and with men in particular they are reluctant to get tested if they are asymptomatic (2). I think that making an appointment for him at the clinic may facilitate initiation of treatment. It may have been helpful to provide EH with some examples of how to approach her partner and facilitate her partner to get tested. For example, she can demand compliance with testing and treatment from him or the relationship will suffer.

Education about further STD prevention is always necessary with every encounter with a teenager, particularly when they are sexually active. I felt this was adequately addressed with the patient on several occasions. We were able to engage in a conversation rather than lecturing to her. Also, I was able to personalize it given her recent vaginitis, UTI, and chlamydia history.
Sexually Transmitted Diseases in Adolescents: A focus on Prevention

Sexually transmitted diseases are among the top 10 reportable diseases in the United States with 12 million cases reported annually. 3 million of those are reported to occur in adolescents. Sexually active adolescents have the highest rates of STDs of any sexually active age group. Estimates report 2/3s of all STD cases occur in young people less than 25 yrs (1). Although there has been an overall decline in sexual activity among adolescents 15 to 19 years of age in the United States, 1/2 of adolescents report ever being sexually active and approximately one-third are currently sexually active (1). The manifestations of these diseases place adolescents at great risk for significant morbidity presently and in the future. Aggressive efforts to diagnose, treat, and prevent sexually transmitted diseases in adolescents should be instituted. Identifying issues specific to adolescents’ risks of STD’s is an important first step.

Adolescents are a vulnerable population. As they enter puberty sexual curiosity increases. Many adolescent reach sexual maturity well before emotional, cognitive, and social maturity and economic independence (9). An adolescent’s preparedness for sexual relationships varies greatly. Better prepared adolescents will tend to make more rational and informed decisions thereby facing fewer health risks associated with sexual activity. Less prepared adolescents will make less rational decisions and risk major morbidity and even mortality from STDs (9).

Many STD education classes are presented to adolescents in high school. However, the average age of first intercourse is dropping (9). Few children receive comprehensive STD and contraception education before attending high school. As a result by the time teenagers are taught about STD and contraception many have began negative sexual practices and attitudes. Early age of first intercourse appears to be related to early pubertal development, a history of sexual abuse, poverty, lack of attentive and nurturing parents, cultural and family patterns of early sexual experience, lack of school or career goals, and poor school performance (9). Sexual initiation is also related to other adolescent high-risk behaviors such as tobacco, alcohol, and drug use.

Many studies have shown adolescents increased risk of STD is due to sequential monogamous short-lived relationships. 19% of sexually active high school students report having had four or more successive partner (9). Thirty-one percent of 21 yr old females and 45% of 21-year-old males report having had six or more lifetime sexual partners (3). This sexual practice places adolescents of increased risk of exposure to STDs. Adolescents believe that if they are with only one partner they are not at risk of exposure to STDs and therefore do not use condoms for STD protection. They do not realize the implications of sequential monogamous relationships.

Although the rate of condom use among adolescents has been increasing over the past 20 years, adolescents still use contraceptives very infrequently. The most common reasons for not using contraception/STD prevention is a failure to anticipate sexual intercourse and a lack of knowledge about contraception/STD prevention (9). About one half of first sexual experiences occur without the use of any contraception/STD
prevention (9). In a survey of high school students from 1991 –1997, 38%- 51% of all sexually active females reported condom use during their last sexual experience. While 56%-63% of all sexually active males reported condom use during their last sexual experience (4). Of those adolescents sexually active less than 50% consistently use a condom with every act of sexual intercourse (4).

Studies have consistently shown that increased efforts of sexual education programs to include condom, contraception, and STD education are very effective when compared to abstinence programs alone. There is no evidence to date to suggest that sexual education and condom education contributes to increased sexual activity. The most effective programs are those that make condoms available to students in a designated area on campus. Studies show that these combined education and availability programs have increased condom use 3 times compared to a 2 time increase of condom use with education programs emphasizing condom use alone (4). Some programs that emphasize contraception only place adolescents at risk of increased STDs because many adolescents will be on OCP or IM contraception without sufficient knowledge of the risk for STD contraction from unprotected sexual intercourse. With effective interactive and demonstrative education, adolescents can be taught to use condoms properly and effectively. One study showed a 2%-4% failure rate with condom use in adolescents following such an education program (4).

Many well known and documented barriers to STD prevention and condom use include a lack of financial support to purchase them, no transportation to sites where they are available, and concern about confidentiality. However, other psychological factors contribute to adolescents’ inconsistent use of condoms. Although adolescents may have sufficient knowledge of STDs and contraception this knowledge may not translate into safe and mature sexual behaviors. As part of normal development adolescents are concrete thinkers who understand future consequences of their actions (1). Adolescents also believe they will not suffer any negative consequences. Adolescents must have a belief that there is a risk for STDs, and a belief that condoms can help prevent STDs. Evidence shows that school based health clinics can have a significant impact on adolescent health. In particular studies showed the screening and treatment for chlamydia and gonorrhea decreased the prevalence of infection among students. The highest rates and most common STD in adolescents are chlamydia and gonorrhea (2,3,4). One study in 8 urban public high schools in Louisiana over a 3-year period looked at the prevalence of chlamydia and gonorrhea and subsequent results of treatment. During the first screening test 11.5% of girls and 6.2% of boys were infected with chlamydia, and 2.5% of girls and 1.2% of boys were found to be infected with gonorrhea. Over 90% were asymptomatic. Repeat testing showed chlamydia prevalence decreased to half the rate of control schools, however among girls chlamydia prevalence decline only slightly of note parental refusal rates ranged from 1.4% to 4.2% (2). Girls are more likely to have older male partners who may be less likely to be involved in any screening program or prevention programs for STDs. School based programs have the potential to reduce STD over time. Although the study was unable to demonstrate a significant decrease in chlamydia in girls, a screening program would be justified even if only to identify and treat infections to reduce the morbidity of untreated asymptomatic infections.

Some well-documented barriers to obtaining adequate information about contraception and STD prevention are the lack of access to confidential health services.
Adolescents are often reluctant to seek a physician because of the fear that parents will be aware of the visit. Even though in California adolescents can seek reproductive health services without the consent of their parents, many adolescents are unaware of this. Others may have financial barrier to health services that hinder their access to physicians. A school-based clinic will help erase some of these barriers and fears among adolescents.

Even among adolescents with access to school based clinics and adequate knowledge about contraception and STDs, many may lack sufficient autonomy to ensure proper use of STD prevention. This is particularly true of females who feel an imbalance of power with men and are not able to express their concerns adequately. Development of negotiation skills is essential for females to assert their decision to practice safe sexual intercourse.

Other less documented risk factors for STD among adolescents are psychologic stressors. Adverse childhood experiences may have long-term consequences on at risk behaviors that lead to an increased risk of STDs. One retrospective cohort study looked a population of managed care organization members greater than 18 years of age with a self reported history of STD and completed a questionnaire about 7 categories of adverse childhood experiences including: emotional, physical, or sexual abuse, living with a battered mother, living with a substance abusing, mentally ill, or criminal household member. The study found that 59% of women and 57% of men reported 1 or more categories of adverse experiences during childhood (5)). There was a graded relationship between the number of adverse childhood experiences and a self reported history of STDs. The odds ratios for women ranged from 1.45 to 3.4 (1 to 7 adverse experiences) and for men it ranged from 1.46 to 5.3. This study suggests that decreasing the prevalence of adverse childhood experiences may contribute to decreasing at risk sexual behaviors.

Adolescents are a vulnerable population, especially with sexual behaviors. Recognizing some of the issues specific to adolescents will facilitate open communication and an improved outreach to adolescent STD prevention.
References:


3. Amador, L. Diagnosis and Treatment Of Sexually Transmitted Diseases In Adolescence: A Practical Clinical Approach. Clin Fam Pract - 2000 Dec; 2(4); 967-991


8. Workowski, KA. Sexually Transmitted Diseases Treatment Guidelines 2002 MMWR Morb Mortal Wkly Rep - May 10, 2002; 51(RR-6); 1