



CPU-Net MEDICAL ALERT

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Part 1 of 2 Parts

PEDIATRIC VULVOVAGINITIS: EVALUATION & TREATMENT

Dear CPU-Net colleague:

This issue on pediatric vulvovaginitis is composed of two parts. The first part deals with the etiology and methods of evaluation of vaginal discharge in children while the second part will give a synopsis on treatment including a practical handout for patients with nonspecific vaginitis in English and Filipino formats. A survey is also included in the first part. We encourage you to fill it up so we may know the situation in your area of practice and come to a consensus in the management of vaginal discharge. We will send you the 2nd part of this medical alert after we receive your reply to the survey. Thank you for your cooperation!

CPU-NET RESEARCH & PUBLICATION TEAM

Introduction

The presence of vaginal discharge is one of the most common gynecologic problems in premenarchal girls. The severity varies from child to child and may result from multiple causes, including infection, irritation, foreign body, allergy, systemic diseases, or sexual abuse. In prepubertal girls, the majority of vulvovaginitis infections involve primary irritation of the vulva with secondary involvement of the lower one third of vagina.

Etiology

In premenarchal girls, nonspecific vulvovaginitis accounts for 50% to 75% of vulvovaginitis cases. The following are the predisposing factors for premenarchal girls:

1. Anatomic factors: These anatomic characteristics diminish protection of the introitus by the labia majora, leaving the vagina open and unprotected when the child squats.
 - a. Small labia minora
 - b. Absence of labial fat pads
 - c. Absence of pubic hair
 - d. Proximity of the anus to the vagina
2. Physiologic factors:
 - a. Decreased level of estrogen makes the vaginal epithelium thin, which is susceptible to irritation and inflammation.
 - b. Vagina lacks lactobacilli, which may increase susceptibility to bacterial growth.
3. Behavioral factors:
 - a. Poor perineal hygiene (further exacerbated by the proximity of the anus to the vagina)
 - b. Use of tight-fitting, nonabsorbent clothing
 - c. Exposure to chemicals such as shampoos and deodorant soaps

Other causes of nonspecific vulvovaginitis are sexual abuse and frequent masturbation leading to vulvar irritation.

Specific infections (infectious vulvovaginitis) in prepubertal girls are often secondary to respiratory, enteric, and, less frequently, sexually transmitted organisms. The respiratory pathogens passed from nose and mouth to the vulva secondary to poor hygiene include: group A streptococcus, *Staphylococcus aureus*, *Haemophilus influenza*, *Streptococcus pneumoniae*, and *Neisseria meningitidis*; enteric pathogens include *Shigella* and *Yersinia*. Recurrent vulvar/perianal itching, especially at night, is suspicious for a parasitic infection such as pinworms (*Enterobius vermicularis*). Additional rare pathogens include *Candida* species, *Gardnerella vaginalis*, and sexually transmitted diseases such as *Neisseria gonorrhoea*, *Chlamydia trachomatis*, and human papillomavirus, frequently a result of sexual abuse.

Other rare noninfectious factors may be responsible for acute or chronic vulvovaginitis. These include foreign bodies, vaginal polyps or tumors, systemic illnesses, ectopic ureters, and urethral prolapse.

Diagnosis

Evaluation for vulvovaginitis includes obtaining a careful history, and information should be elicited regarding bathroom habits, recent upper respiratory infection, and the use of irritants such as soaps. Common symptoms include diffuse vulvovaginal pain, burning, pruritus, dysuria, and possible seropurulent discharge. Examination entails careful vulvar and hymenal inspection. The vulvovaginal region may have a markedly mottled reddish appearance. In cases with an infectious cause, the vaginal discharge may be more purulent and malodorous.

A microbiologic investigation is indicated if visible vaginal discharge with moderate-to-severe inflammation is present upon examination. Diagnostic tests to differentiate specific infectious causes of vulvovaginitis are presented in Table 1. Other exclusion methods may be used, such as a pinworm test or chlamydia/gonorrhoea cultures if sexual abuse is suspected.

The challenge in diagnosing vulvovaginitis in this age group is differentiating between infectious and noninfectious causes. Discerning the correct diagnosis may be difficult because of the overlap between normal flora and potential pathogens in the pediatric population. The presence of an organism is not necessarily deemed to be the etiologic cause. A diagnosis of nonspecific vulvovaginitis should be made if vaginal cultures grow normal flora and no other etiology is known for the vulvovaginitis.

TABLE 1. DIFFERENTIAL DIAGNOSIS OF VAGINITIS

VARIABLE	NORMAL	CANDIDIASIS	BACTERIAL VAGINOSIS	TRICHOMONIASIS
Symptoms	None or mild	Pruritus, burning discharge	Foul smelling discharge	Frothy, foul smelling discharge, pruritus, dysuria
Discharge	-	Thick, adherent. white	Thin, homogeneous, gray-white	Purulent profuse, irritating, frothy, green-yellow
Whiff test *	Negative	Negative	Positive	Variably positive
PH	4 to 4.5	4 to 4.5	>4.5	>4.5
Saline microscopy	PMN: EC ratio <1; rods dominate; squames +++	↑ WBCs, budding yeast Pseudohyphae (40% of cases)	>20% clue cells	↑ WBCs Trichomonads
10% KOH exam	Negative	Pseudohyphae (70% of cases)	Negative	Negative

*Whiff test- specimen diluted in a drop of 10% KOH which releases characteristic amine odor.
 PMN: polymorphonuclear cells; EC: vaginal epithelial cells

MD Name:

CP Unit:

SURVEY (PLEASE ENCIRCLE)

1. On average, how many pediatric patients with vaginal discharge do you see in your practice in a month?
 - a. 0
 - b. 1-2 patients
 - c. 3-5 patients
 - d. >5 patients

2. What diagnostic work up do you do, if any? (Check all that may apply)
 - a. Wet mount (saline wet mount)
 - b. KOH smear
 - c. Gram stain
 - d. Regular culture
 - e. Thayer-Martin culture
 - f. Others: _____

3. How many pediatric patients do you see in a month have sexually transmitted infections (STI)?
 - a. 0
 - b. 1-2 patients
 - c. 3-5 patients
 - d. >5 patients

4. What infections do you see in your pediatric patients? Please specify number in a month.
 - a. *Neisseria gonorrhoeae* _____
 - b. Syphilis _____
 - c. HIV _____
 - d. *Trichomonas vaginalis* _____
 - e. *Condyloma acuminata* (warts) _____
 - f. Herpes simplex _____
 - g. Bacterial vaginosis _____
 - h. Others: _____

5. What are the other diagnoses for your pediatric patients with vaginal discharge?(Encircle all that may apply)
 - a. Poor hygiene
 - b. Use of tight-fitting, nonabsorbent clothing
 - c. Exposure to chemicals
 - d. Frequent masturbation
 - e. Parasites such as pinworms
 - f. Respiratory infections
 - g. Foreign body _____ (please specify _____)

- h. Others: _____

6. What treatment do you give your pediatric patients diagnosed with the following(Generic drug name and form i.e., PO or IV or topical used. No need to give dosage)
 - a. Candidiasis _____

 - b. Bacterial _____ vaginosis

 - c. Trichomoniasis _____

 - d. Gonococcal _____ infection

7. How do you advise your patient/guardian regarding perineal hygiene
 - a. Wash with regular soap and water
 - b. Wash with commercial vaginal wash and water
Please specify _____)
 - c. Treat with antibiotics
 - d. Others _____ (please specify) _____

8. Are there certain traditional practices in your area that you think may contribute to vaginitis in the pediatric population?

___NO
___YES if yes, please describe.

9. Are there traditional practices in your area in treating vaginitis in the pediatric population?

___NO
___YES If yes, please describe.

Pediatric Vulvovaginitis: Evaluation & Treatment
Part 2 of 2 parts

Treatment

In most pediatric cases, vulvovaginitis does not have a specific cause. In those cases, treatment should focus on improving hygiene and providing appropriate vulvar care. Figures 1 & 2 are parent/patient education handouts for vulvovaginitis and include instructions on perineal hygiene.

Small amounts of a bland nonmedicated ointment may be used to protect the vulvar skin. If a child is suspected to be in an itch-scratch cycle from pruritus secondary to chronic discharge and inflammation, sitz baths should be recommended. Sitz baths consist of having the

child sit in lukewarm water to soothe the inflamed vulva. It is best to minimize the use of soap on the vulva and wash with a white washcloth or fingers. Occasionally, a low-dose topical steroid (hydrocortisone 1% or 2.5%) may help relieve itching and inflammation if unresponsive to conservative measures.

If symptoms do not resolve with hygiene methods, broad-spectrum antibiotics should be initiated ONLY AFTER APPROPRIATE CULTURES HAVE BEEN DONE. Adequate clinical response can be achieved with a course of oral penicillin, cephalosporin, or erythromycin. Amoxicillin 40 mg/kg/day or erythromycin 30-50 mg/kg/day for 10 days usually offers adequate therapeutic coverage for the common pathogens that cause vulvovaginitis.

If a specific overgrowth of bacteria is noted, antibiotic therapy should be directed toward the particular pathogen. If a diagnosis of pinworm is made, therapy should be instituted using mebendazole 100 mg orally in a single dose and repeated in 1 week. In these cases, it is advised to treat the entire family to prevent reinfection.

If symptoms fail to resolve after 2 courses of broad-spectrum antibiotic therapy, then an examination under anesthesia to rule out a foreign body or referral to a specialist should be considered. Sexually transmitted infections (STIs) though not common should be ruled out and appropriate interventions are done. The implications of STIs and the corresponding treatment are presented in tables 2, 3 and 4.

TABLE 2. Implications of Commonly Encountered STIs for the Diagnosis and Reporting of Sexual Abuse of Infants and Prepubertal Children

STI Confirmed	Sexual Abuse	Suggested Action
Gonorrhea*	Diagnostic†	Report†
Syphilis*	Diagnostic	Report
HIV infection§	Diagnostic	Report
<i>C trachomatis</i> infection*	Diagnostic†	Report
<i>T vaginalis</i> infection	Highly suspicious	Report
<i>C acuminata</i> infection* (anogenital warts)	Suspicious	Report
Herpes simplex (genital location)	Suspicious	Report
Bacterial vaginosis	Inconclusive	Medical follow-up

* If not perinatally acquired and rare nonsexual vertical transmission is excluded.

† Although the culture technique is the "gold standard," current studies are investigating the use of nucleic acid–amplification tests as an alternative diagnostic method in children.

‡ To the agency mandated in the community to receive reports of suspected sexual abuse.

§ If not acquired perinatally or by transfusion.

|| Unless there is a clear history of autoinoculation.

N.B. The presence alone of T. vaginalis, C. acuminata and Herpes simplex are NOT diagnostic NOR CONCLUSIVE of child sexual abuse. Further investigation is warranted to find out if abuse happened.

Figure 1. Parent/patient education handout for vulvovaginitis.

VULVAR CARE FOR VULVOVAGINITIS

Your child has a minor bacterial infection, which may cause vaginal discharge, itching, redness, and pain. Typically the bacteria come from the respiratory tract or from the rectum. It is therefore important to encourage and assist your daughter with appropriate vulvar hygiene. These instructions for vulvar care will help prevent further occurrences.

- Ensure that your child takes the medication as prescribed by her doctor: _____.
- Use 100% white cotton underwear and wash this in gentle detergent that has no perfumes or dyes. Encourage your child to change underwear daily.
- Use toilet paper with no perfumes or dyes. Do not use talcum powder or other chemicals that may irritate her. Avoid bubble baths.
- If your child has some discomfort, have her do sitz baths, where she may sit in a tub of lukewarm water to soothe the inflamed vulva. Do this for 10 minutes daily for 7 days.
- Use lactic acid (e.g. Lactacyd, pH care, etc.) or a bar of gentle soap with no perfumes or deodorants. Avoid using soap on the vulva.

Wash the vulva well with clean water.

- Keep your child's bottom as clean and dry as possible.
- Review instructions to wash and wipe from front to back after using the bathroom.
- Review frequent hand washing with your daughter.
- Have your daughter urinate with her legs apart.

Figure 2. Filipino version of parent/patient education handout for vulvovaginitis

WASTONG PAGLILINIS NG MGA ARI NG BATA

Ang inyong anak ay may impeksyon sa ari na maaring magkaroon ng sipon, pangangati, pamumula at pananakit. Kalimitan ito ay dahil sa mga bacteria na sanhi ng ubo't sipon o galing sa kanyang puwet. Importante na maging malinis ang ari ng inyong anak. Ang sumusunod ay upang maiwasan ang pag-ulit ng ganitong impeksyon.

- Siguraduhing inumin ang gamot na iniresita ng inyong doctor:
- Magpalit ng panty araw-araw. Gumamit lamang ng "cotton" na panty. Bawal ang masisikip na shorts at pantalon at nylon na panty. Bawal din maglagay ng pulbos at iba pang mga kemikal sa bandang ari ng bata.
- Magbabad o magtampisaw sa isang batya na may maligamgam na tubig ng 10 minuto araw-araw. Bigyan ng laruan para magtagal ng 10 minuto. Gawin ito ng isang linggo.
- Gumamit ng "lactic acid solution" (hal. Lactacyd, pH care, etc.) imbes na sabon para linisin ang bandang ari at puwet at mag-banlaw. Ugaliing maghugas ng tubig tuwing matapos umihi at dumumi. Maaring gumawa ng sariling lactic acid solution sa bahay: magdagdag lamang ng isang kutsaritang suka sa isang litro ng malinis na tubig at gamitin ito ng pang-linis.
- Tuwing maghuhugas pagkatapos ng bawat pagihi o pagdumi, siguraduhing palikod (papunta sa bandang puwet) ang pagpunas, at hindi paharap. Ito'y para maiwasan ang pagiwan ng dumi sa bandang harapan ng bata na maaring maging sanhi ng "discharge" o parang nana galing sa ari.
- Maghugas ng kamay pagkatapos gumamit ng palikuran.
- Pa-ihiin ang inyong anak ng nakabuka ang kanyang hita upang walang maiwan na ihi sa kanyang ari.

TABLE 3. Recommended Treatment Regimens for the Most Common Vaginitis in Children & Adolescents

PATIENT	CANDIDIASIS	BACTERIAL VAGINOSIS	TRICHOMINIASIS
Children <45 kg	Topical azole preparation (Clotrimazole cream 1% BID or TID for 14-28 days OR Ketoconazole cream 2% BID for 14-28 days)	Metronidazole 5 mg/kg/dose TID for 7 days (maximum 1 gram per day) PO	Metronidazole 5 mg/kg/dose TID for 7 days (maximum 2 grams per day) PO
Adolescents and children >45 kg	Topical azole preparation as above OR Fluconazole 150 mg orally in a single dose	Metronidazole 500 mg orally BID for 7 days OR Metronidazole gel 0.75%, one applicator (5g) intravaginally once a day for 5days	Metronidazole 400 mg orally twice daily x 7 days

TABLE 4. Gonococcal Infection Treatment for children & adolescents

Disease	Prepubertal children <100 lb (<45kg)	Patients weight ≥100 lbs (≥45 kg) & who are >8year old
Uncomplicated vulvovaginitis, cervicitis, urethritis, proctitis, or pharyngitis	Ceftriaxone 125mg IM in single dose OR Spectinomycin 40mg/kg (maximum 2g) IM, single dose PLUS Azithromycin 20mg/kg (maximum 1 g) orally in single dose OR Erythromycin 50 mg/kg per day (maximum 2 g/day) orally in 4 divided doses in 14 days	Ceftriaxone 125mg IM in single dose PLUS Azithromycin (maximum 1 g) orally in single dose OR Doxycycline (100mg orally twice a day for 7 days)
Disseminated gonococcal infection (e.g., arthritis-dermatitis syndrome)	Ceftriaxone 50mg/kg per day (max. 2g/day) IV or IM once a day for 7 days PLUS Azithromycin or erythromycin	Ceftriaxone 1g IV or IM once a day for 7 days OR Cefotaxime 1 g IV every 8 hours for 7 days PLUS Azithromycin 1 g orally in single dose OR Doxycycline 100mg orally twice a day for 7 days
In addition to the recommended treatment of gonococcal infection therapy for <i>Chlamydia trachomatis</i> is recommended on the presumption that the patient has concomitant infection. Routine presumptive treatment is not recommended because many entities have similar clinical presentations. Perineal hygiene and hot sitz bath is essential part of supportive treatment. Vaginal douche is not recommended since this can cause infection to upper tract.		

Clinical Pearls

1. Most cases of vulvovaginitis are nonspecific, with cultures demonstrating normal urogenital flora and no other identifiable etiology.
2. Vulvovaginal candidiasis is very rare in children unless the child is immunocompromised or on antibiotics.
3. Foreign bodies are rare and are often associated with foul-smelling bloody discharge.
4. Hygiene is critical in the management of vulvovaginitis (see patient handouts, Fig 1 & 2).
5. Chronic vulvovaginitis unresponsive to therapy warrants a referral to a specialist.
6. STIs though uncommon have specific implications that warrant intervention and specific treatment.

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