Recurrent Gonococcal Vulvovaginitis in Child: An Interesting Case Report

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Abstract
Introduction: Vulvovaginitis is a common complaint found in gynecology outpatient clinics in prepubertal children. Gonorrhea infection in children often manifests as vulvovaginitis. The etiology of vulvovaginitis in children can be infectious and non-infectious. Complete anamnesis, appropriate physical examination, and supporting laboratory examinations are needed to determine the etiology of vulvovaginitis in patients so that therapy can be given according to the etiology.
Case presentation: A 7-year-old girl was diagnosed with recurrent gonorrhea vulvovaginitis. The patient has received therapy according to the guidelines for the management of uncomplicated gonorrhea, namely single-dose ceftriaxone, single-dose cefixime, and single-dose azithromycin, but re-infection occurred. The complication in the patient was malnutrition. The patient had a history of enterobiasis and complained of worms coming out of the vagina. Therefore, fistulography and vaginoscopy procedures were performed with normal results.
Conclusion: Comprehensive and multidisciplinary management of gonorrhea vulvovaginitis in children is needed to prevent recurrence and anticipate complications that may occur later. Appropriate guidance and counseling should be provided, and prevention of future episodes should be considered.

Keywords: Children, Recurrent gonorrhea infection, Vulvovaginitis

Vulvovaginitis Gonore Rekuren pada Anak: Sebuah Laporan Kasus Menarik di Rumah Sakit Hasan Sadikin Bandung

Abstrak
Pendahuluan: vulvovaginitis merupakan keluhan yang sering ditemukan pada anak prepubertas di poliklinink ginekologi. Infeksi gonore pada anak-anak sering bermanifestasi sebagai vulvovaginitis. Etiologi vulvovaginitis pada anak dapat berupa infeksi dan non-infeksi. Anamnesis lengkap, pemeriksaan fisik yang sesuai, dan pemeriksaan penunjang laboratorium diperlukan untuk menentukan etiologi vulvovaginitis pada pasien sehingga dapat diberikan terapi sesuai dengan etiologinya.
Presentasi kasus: seorang anak perempuan berusia 7 tahun didiagnosis dengan vulvovagitis gonore rekuren. Pasien telah mendapatkan terapi sesuai dengan pedoman tata laksana gonore non-komplikata, yaitu ceftriaxone dosis tunggal, cefixime dosis tunggal, dan azitromisisn dosis tunggal, namun terjadi re-infeksi. Penyulit pada pasien adalah malnutrisi. Pasien memiliki riwayat enterobiasis dan mengeluhkan keluar cacing dari vagina. Oleh karena itu, dilakukan prosedur fistulografi dan vaginoskopi dengan hasil normal.
Kesimpulan: tata laksana vulvovaginitis gonore pada anak yang komprehensif dan multidisiplin diperlukan untuk mencegah terjadinya rekurensi dan mengantisipasi komplikasi yang mungkin terjadi di kemudian hari. Panduan dan konseling yang tepat harus diberikan, serta pencegahan episode di masa depan harus dipertimbangkan.

Kata kunci: Anak, Infeksi gonore rekuren, Vulvovaginitis

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Introduction

Inflammation of the vulva and vagina, or "vulvovaginitis," is a common gynecologic problem in young adult and adolescent girls.[1] Vulvovaginitis can be caused by a variety of infectious and noninfectious causes. Infectious causes of vulvovaginitis include trichomoniasis, vulvovaginal candidiasis, bacterial vaginosis, and gonorrhea. Noninfectious factors such as douching, irritating chemicals, vaginal foreign bodies, and inadequate hygiene can also cause symptoms of vulvovaginitis. A complete history taking, appropriate physical examination, and laboratory investigations are needed to determine the etiology of the patient's symptoms. Once vulvovaginitis is diagnosed, appropriate guidance and counseling should be provided, and prevention of future episodes should be considered.[1,2]

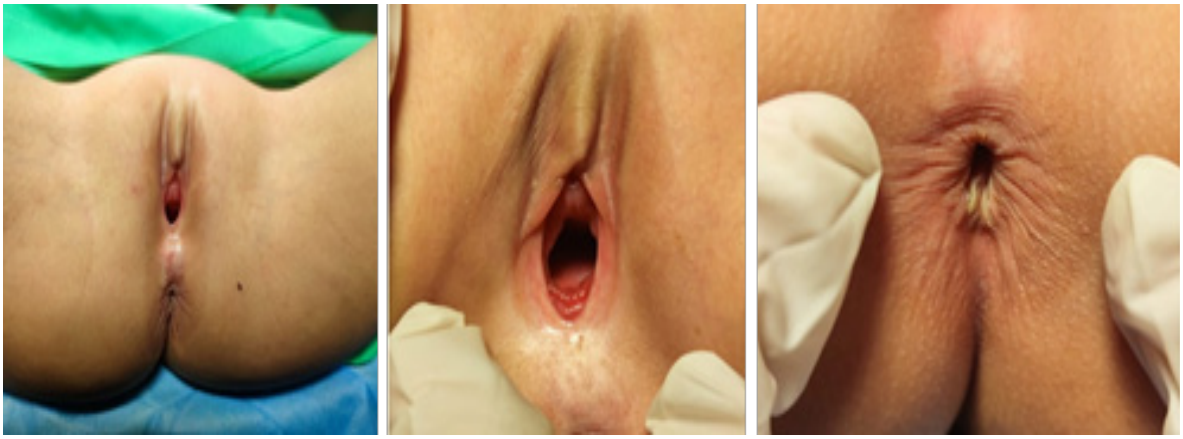
This case report discusses a rare case of recurrent gonococcal vulvovaginitis in a 7-year-old girl. Diagnosing gonococcal infection in children is very important because it requires a thorough investigation of the source of infection, especially excluding the possibility of sexual abuse.[3,4]and is equally as common as physical abuse. Although some children will make allegations of (disclose Comprehensive and multidisciplinary management is also needed to prevent similar incidents and anticipate complications that may occur later.

Case Presentation

A 7-years old girl was referred to the gynecology outpatient clinic in Hasan Sadikin Hospital, Bandung with a chief complaint of foul-smelling and greenish-yellow discharge coming out from the vagina which persisted for one year. The complaint was also accompanied by an itch sensation in the genital and anal area. Complaints of dysuria were felt. Complaints of fever and abdominal pain were denied by the patient. The patient had a history of intermittent constipation since the age of 4 years, the patient complained of having a hard stool accompanied by painful defecation, and no visible blood or mucus in the feces.

The patient had previously been diagnosed with suspected gonococcal vaginitis and enterobiasis with suspected rectovaginal fistula by a paediatrician and dermatologist. Previous treatment history included oral mebendazole, a single dose of 200 mg oral cefixime, 400 mg of oral azithromycin, and single dose intramuscular injection of ceftriaxone without any improvement. History of vaginal bleeding or insertion of foreign objects into the vagina was denied. Her mother admitted that the patient had a history of purulent eye infection when she was a newborn which improved after treatment for gonococcal conjunctivitis. Her mother was reported having a similar complaint that resolved after receiving treatment for gonococcal infection. The patient's parents had divorced at the time of presentation to the clinic, and the patient's father had a history of multiple sexual partners previously. A history of using a shared towel and bar soap in the family was present. The history of swimming and bathing together was denied. The sufferer is an only child and was always under close supervision from her mother, aunt, and grandparents. According to her family, there was no change in her daily behavior. There was no remarkable history of her growth and her development was according to age. The patient rarely washes her hands after using the bathroom.

The patient was born prematurely (35 weeks) by cesarean section due to failed labor induction in preterm premature rupture of membranes from a P1A2 mother. Her birth weight was 2400 grams, and no abnormalities were found in her growth and development history. She had received complete basic



Gambar 1 Physical Examination of the Patient's Genitalia Showed an Intact Hymen, with an Anal Fissure at 6 o'clock.

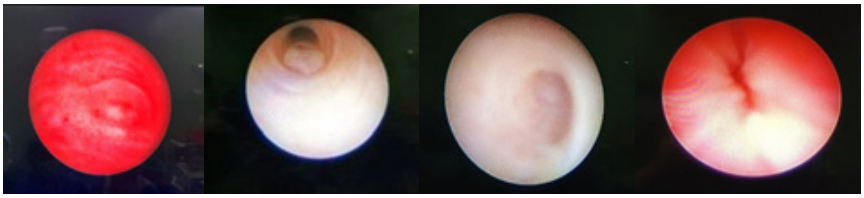
immunization according to the government program.

On physical examination, her vital signs are within normal limits. Her anthropometric measurement revealed moderate malnutrition. The vulvovaginal region shows mild erythema with copious thick, purulent, greenish-yellow discharge. Evaluation of the external genitalia was carried out; the hymen was found to be intact. Blisters, cuts, or bruises on the genitals or other body parts were not found. No enlargement of inguinal lymph nodes was found.

Specimens were collected for Gram stain and culture. Vaginal swab preparations showed gram-negative diplococci resembling extracellular coffee beans. Culture on Thayer Martin media yielded growth of gray colonies of gram-negative diplococcus identified as Neisseria gonorrhoeae. Resistance culture showed sensitivity to ceftriaxone and cefixime. The urinalysis and urine culture results were normal. The patient had a history of enterobiasis with complaints of worms coming out of the vagina, which prompted fistulography to be carried out under suspicion of rectovaginal fistula. The result revealed no fistulae present. The patient's mother provided consent for the parents' examination to explore possible sources of infection. The vaginal swab on the mother came back negative for gonococcal bacteria. The patient has been tested for anti-HIV, HBsAg, TPHA, and VDRL with negative results. Examination for chlamydia infection has not been performed.

From the history, physical examination, and supporting investigations, a diagnosis of gonococcal vaginitis was confirmed. Initial treatment with cefixime 100 mg twice daily orally for one week resulted in resolve of symptoms before the complaints recur in one month. A subsequent repeat course of cefixime treatment accompanied by vitamin D supplementation resulted in the resolution of symptoms before the complaints reappeared one month later.

The patient was then scheduled to undergo vaginoscopy and cystoscopy for further evaluation under general anesthesia. On vaginoscopy, the vaginal walls appeared intact, hyperemia and fibrosis were visible. Further exploration showed inflammatory cervical tissue., a biopsy of which revealed a histopathology result of squamous metaplasia of immature cervix epithelial – consistent with normal findings in children. The procedure includes exploration of the urinary tract and the anal canal. The left ureter contained debris and appeared larger than the right one. The bladder neck mucosa was hyperemic, despite no edema, trabeculation, sacculation,



Gambar 2 Intraoperative findings of cystoscopy and vaginoscopy. The vaginal wall appeared hyperemic and there was fibrosis. Further exploration showed inflammation of the cervical tissue. Exploration of the urinary tract showed debris in the left ureter, bladder neck within normal limits, edema (-), hyperemia (+), trabeculation (-), sacculation (-), diverticula (-), stones (-), masses (-). No defects were seen on the entire surface of the urethral wall from proximal to distal.

diverticula, stone, or mass being found. There were no visible defects on the entire surface of the urethra wall from proximal to distal. The findings were consistent with cystitis and urethritis. Evaluation of the anus revealed an anal fissure at 6 o'clock direction with signs of inflammation present. Findings correlated with cervicovaginitis; anal fissure; urinary tract infection (cystitis; urethritis).

Treatment given during hospitalization was cefotaxime 2g given twice daily and paracetamol 300mg thrice daily intravenously, accompanied by lactulose 5cc thrice daily per oral for 5 days. The patient reported the vaginal discharge and the pruritus had subsided. The vulva was not erythematous and no discharge was found. The patient was discharged five days after the procedure with a follow-up examination being scheduled one week after hospital discharge and every six months.

Discussion

The prevalence of gonococcal infection varies widely across communities and populations. The World Health Organization (WHO) reported that there were around 82.4 million new cases of gonorrhea infection worldwide in 2020.[5] The incidence of gonorrhea infection was around 21.1 million in the Southeast Asia region.[5] Gonorrhea infection in Indonesia is the highest of all types of sexually transmitted infections (STIs) with the highest epidemiology of sufferers in the 15-24 year age group. Data on the prevalence of gonorrhea in children is still limited. [5–7] Gonorrhea vulvovaginitis is the most common form of gonorrhea infection in prepubertal children. [8,9] This is because the vaginal mucosa of prepubertal children is more susceptible to gonococcal infection due to lower estrogen levels in children such that the mucosa is thinner than that of adolescents and adults. In addition, the vagina of prepubertal children has a basic pH (6.5-7.5), which makes it susceptible to infection and colonization of gonococcal bacteria. Other risk factors include the anatomy of the vulva at prepubertal age lacking protective pads of vulvar fat and pubic hair, the labia minora tend to be more open when squatting, and the vulvar skin is thinner, smoother, and more sensitive. Poor personal hygiene in children, immunological factors, and these factors cause the vulva and vagina of prepubertal children to act as good culture media for gonorrhea bacteria.[8–11]

Most cases of gonococcal vaginitis found in prepubertal children are sexually transmitted, but nonsexual transmission is also possible, although rare and difficult to prove scientifically. Poor hygiene and the vulnerability of the genitalia of prepubertal children allow for transmission of gonorrhea infection through direct contact

or transmission through shared objects.[2,12,13] Public baths, towels, rectal thermometers, and infected caregivers' hands can be sources of transmission in some cases of nonsexual gonorrhea transmission.[2] A case report in Sydney reported transmission of gonorrhea infection in an 8-year-old girl via a toilet seat.[14] A study reported that Neisseria gonorrhoeae could still grow in culture after 24 hours of being allowed to dry on a toilet seat. However, there is still no evidence that natural transmission can occur from toilet seats or similar objects.[2,14] Neisseria gonorrhoeae bacteria are sensitive to heat and will be killed at 55˚C for 5 minutes. This bacteria will also be killed in dry conditions but has been reported to survive in pus attached to damp cloth such as towels for several days. It was found that as long as the pus has not dried, towels and cloths containing the pus can be infectious and become a source of transmission. Leishman and Benson reported that gonococcal germs can grow in cultures from rabbit skin samples, bed sheets, rubber, bath water, wood, and iron that were contaminated 24 hours earlier.[2,15,16] Bacterial cultures could not grow in soapy water samples, indicating that washing with soap can prevent transmission of infection.[2]

In this case, several risk factors were found that supported the suspicion of nonsexual transmission of gonorrhea infection from family members. From history taking, it was found that the patient's mother had had similar complaints of vaginal discharge. There was a history of using towels together, often going to the toilet without washing hands afterward, and washing the genitals in an inappropriate manner. The patient and family had been given education about the possibility of transmission, and steps that can be taken to prevent recurrent infection, and suggested that the patient's family also have themselves examined. To ensure that there was no recurrent transmission in family members, vaginal smears were examined on the patient's mother and grandmother. The absence of Gram-negative diplococci ruled out the suspicion of transmission of gonorrhea infection from the mother to the next patient. Examination of the patient's father and grandfather could not be done due to limited transportation costs and the patient's father who had not lived with the patient for a year.

The possibility that the patient's vulvovaginitis is a result of sexual violence must be investigated carefully. Sexual violence in children with a gonococcal infection needs to be suspected if several suspicious physical indicators are found, such as recurrent vulvovaginitis, unexplained genital lesions, pain, wounds, bleeding in the anus, and pregnancy.[3,17]and is equally as common as physical abuse. Although some children will make allegations of (disclose Behavioral changes may occur in a patient who suffers from sexual violence which include bedwetting, regression in bladder and bowel control, decreased school performance and previously achieved developmental stages, fussiness, and attachment to parents, sleep disturbances, nightmares, and eating disorders.[3,17–19]

In this case, complaints of bleeding from the genitals or other parts of the body abrasions, wounds, and bruises were not found. The patient was reported to have shown no changes in behavior in her daily life and was still active, going to school and playing as usual. The patient did not become fussy, ate and drank as usual, and defecated and urinated as usual. The patient lived with her mother, aunt, grandmother, and grandfather and had never left the house alone. This minimizes the suspicion of sexual abuse in the patient but does not eliminate it. Often there are no external signs of abuse in cases of child sexual abuse, so the absence of physical findings does not exclude the diagnosis of sexual abuse. [17,20] If there are signs of physical abuse, these symptoms usually resolve within a few days after the

traumatic event due to the rapid healing of the mucosal tissue. [20,21] This can occur in cases of difficulty defecating due to hard stools or sexual abuse in the form of sodomy. The majority of anal fissures found in cases of constipation are small, superficial, and single. Concern for sexual abuse should be raised if multiple deep or extensive anal lacerations are found, in the absence of inflammatory bowel disease.[3]and is equally as common as physical abuse. Although some children will make allegations of (disclose Most children who have been sexually abused do not show signs of penetrative anal trauma on physical examination. When found, these signs are usually present within 7 days of the last contact with the perpetrator.[21] Penetrating injuries that cause lacerations around the anus are difficult for doctors to distinguish from anal fissures caused by constipation or straining during a bowel movement.[3,20,21] Vaginoscopy is not routinely performed but may be done in this patient to evaluate for possible intravaginal trauma or the presence of a foreign body.[19,2]

The first stage of vulvovaginitis management in children is to eliminate risk factors for vulvovaginal infection, one of which is by teaching genital hygiene.[1,7] Patients need to be taught how to wash their genitals properly, to be specific: direction of cleaning from front to back after urinating or defecating. The perineum should be washed with warm water for two minutes three to four times a day and wiped with a clean unshared towel until vaginal culture results are obtained. Soap for washing and toilet paper or tissue for wiping are not recommended. Overweight or obese girls should be encouraged to lose weight. If constipation occurs, patients are advised to consume a high-fiber diet and increase water intake or take laxatives if necessary.[1] The patient and family have been given counseling and education about the disease, possible sources of transmission, and steps to prevent recurrent infections. The patient's family had improved how to wash their genitals and family members at home no longer use towels together. The use of bar soap has also been stopped. Increased susceptibility to infection may be due in part to decreased immune function due to malnutrition.[22] The patient's family had been educated about efforts to improve the patient's nutritional status to minimize the risk of reinfection.

Treatment of uncomplicated gonorrhea infection in children <45 kg based on the CDC guidelines is a single dose of ceftriaxone 25-50 mg/kg given intravenously (IV) or intramuscularly (IM), with a maximum dose of 125 mg IM. National guidelines in Indonesia recommend single-dose oral cefixime as the first choice in the treatment of gonorrhea infection.[6,11,23] Cefixime, which is included in the third-generation cephalosporin group, has very good activity against Neisseria gonorrhoeae. A study in 1992 reported that single-dose oral cefixime 400 mg was as effective as single-dose intramuscular ceftriaxone 250 mg in the treatment of uncomplicated gonorrhea in adolescents and adults. A single dose of cefixime is recommended for children according to the Canadian Guidelines on Sexually Transmitted Infections.[11] Oral cefixime is preferred for children because it is a less traumatic route of administration than an injection, is less expensive, and has the same efficacy.[11,24] The recommended dose for children is 8 mg/kg/day orally in 1 or 2 divided doses.[7,11,23]

In this case, the patient did not show any clinical improvement even though she had been given appropriate therapy (ceftriaxone and cefixime) and the dosage was in accordance with the management guidelines. The culture test of resistance to microorganisms obtained from the patient's vaginal sample showed sensitivity to ceftriaxone and cefixime, so the cause of antibiotic failure in this patient was not

due to pathogen resistance to administered antimicrobials. Antibiotic failure is a clinical situation that describes antimicrobial treatment as ineffective in eliminating bacterial infections and causing persistent or worsening clinical conditions.[25,26]millions of lives are lost annually to infections. Surprisingly, the failure of antimicrobial treatments to effectively eliminate pathogens frequently cannot be attributed to genetically-encoded antibiotic resistance. This review aims to shed light on the fundamental mechanisms contributing to clinical scenarios where antimicrobial therapies are ineffective (i.e., antibiotic failure In addition to antimicrobial resistance, other factors play a major role in antibiotic failure, including biofilm formation (limited diffusion of antibiotics into the biofilm matrix) and immune system dysfunction.[26] An immune system that is not functioning optimally poses a challenge to the effectiveness of antibiotic therapy, increasing the possibility of treatment failure because antibiotics work together with the body's response to eradicate infections. Frequent or recurrent infections can occur in conditions when there is a disturbance in the body's defense system. Immunodeficiency can be caused by genetic mutations or external factors. Primary immunodeficiency is a change in immune function due to gene abnormalities. Secondary immunodeficiencies are conditions that arise from a variety of external factors, including malnutrition, cancer (e.g., leukemia, lymphoma), autoimmune or metabolic diseases (e.g., AIDS, lupus, diabetes), and premature aging. Antibiotic treatment and aggressive therapy are often required in patients with weakened immune systems to prevent long-term complications associated with chronic infections, while short-term aggressive therapy is often required for individuals with secondary im munodeficiencies.[25,26]millions of lives are lost annually to infections. Surprisingly, the failure of antimicrobial treatments to effectively eliminate pathogens frequently cannot be attributed to genetically-encoded antibiotic resistance. This review aims to shed light on the fundamental mechanisms contributing to clinical scenarios where antimicrobial therapies are ineffective (i.e., antibiotic failure This can also be observed in cases where there is clinical improvement in the patient's condition after being given treatment with a higher dose and duration than usual. This patient was found to be malnourished and had a history of enterobiasis which led to impairment in immune response and persistent infection despite adequate dosage of antimicrobial therapy.

In this case, multidisciplinary management had been carried out in a case of gonococcal vulvovaginitis in a child. Nonsexual etiology transmission is suspected to be the cause in this case. However, the possibility of sexual transmission etiology cannot be ruled out because it requires further investigation.

Conclusion

Gonococcal vulvovaginitis is common in prepubertal children due to several factors, among them, are the anatomy of the labia, the condition of the vaginal mucosa of prepubertal children which is more susceptible to gonorrheal infection, and poor hygiene. The possibility that the patient's vulvovaginitis is the result of sexual abuse must be investigated properly. Often external signs that abuse had occurred are not found in cases of child sexual abuse so that the absence of physical findings cannot exclude the diagnosis of sexual abuse. Management of recurrent vulvovaginitis in children is to eliminate risk factors for vulvovaginal infection and identify and address several factors that can cause failure of antimicrobial therapy. In cases of suspected sexual abuse, it is necessary to anticipate long-term

reproductive health complications that will occur in the future.

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