

CASE REPORT

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Management of Recurrent Aerobic Vulvovaginitis in Children: A Case Report

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ABSTRACT

Introduction: Vulvovaginitis in premenarchal girls tends to recur owing to anatomical and physiological characteristics that increase the susceptibility to infection. **Case:** A 5-year-11-month-old girl presented with recurrent vaginal discharge for one year without response to various antimicrobial treatments, including therapy for fungal infection, anaerobic bacterial infection, gonorrhoea, and non-specific genital infection. Vaginal discharge culture identified *Escherichia coli* and *Staphylococcus haemolyticus* as the causative pathogens of aerobic vulvovaginitis, with a history of constipation and suboptimal genital hygiene as risk factors. The possibility of sexual abuse and of a foreign body had been excluded through history taking, physical examination, and thorough supporting investigations. **Discussion:** The cause of vulvovaginitis in children is often non-specific, and its aetiology differs from that of vaginitis in adults. Although uncommon, sexual abuse and vaginal foreign bodies should be excluded during the initial assessment. Culture-directed antibiotic therapy can effectively target specific pathogens. Education, genital hygiene, and constipation management are important components of comprehensive care. **Conclusion:** Recurrent vulvovaginitis in children requires comprehensive management comprising culture-based antimicrobial therapy, improvement of hygiene and management of constipation, as well as evaluation for sexual abuse and foreign bodies. Comprehensive counselling helps reduce anxiety, supports recovery, and improves the patient's quality of life.

Keywords: Aerobic vulvovaginitis, case report, children, recurrent vulvovaginitis.

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INTRODUCTION

Vulvovaginitis in children is a common condition in paediatric clinical practice and often causes concern among parents and children because symptoms may be persistent or recurrent.[1] Prepubertal children have genital anatomical and physiological differences compared with adults. These differences include thinner mucosa, near-neutral pH, and lack of protective *Lactobacillus* flora, making them more susceptible to infection than adults. These conditions also influence the aetiology of vulvovaginitis in children, which tends to be associated with perianal contamination and suboptimal genital hygiene.[1–3] In cases of vulvovaginitis that do not respond to initial treatment, further evaluation is required to establish the specific aetiology and identify risk factors that may contribute to recurrence.[1,4] This case report describes the diagnostic challenges and comprehensive management of recurrent vulvovaginitis in a child, despite previous treatment with various antimicrobial agents.

CASE

A girl aged 5 years 11 months presented with her parents to the Dermatology and Venereology Outpatient Clinic at Dr. Cipto Mangunkusumo National Central General Hospital with recurrent vaginal discharge for one year. The discharge was yellowish-green **(Figure 1A)**, thick, and occasionally accompanied by vulval pruritus, without pungent odour, frothiness, dysuria, or lower abdominal pain. The frequency was initially 1–2 times per week and increased to daily, requiring the patient to change her underwear up to three times a day.

Over the preceding year, the patient received antimicrobial treatment at previous healthcare facilities, including metronidazole, fluconazole, and clindamycin, which provided temporary improvement. Six months before presentation, Gram staining of the vaginal discharge showed intra- and extracellular Gram-negative *diplococci*; the patient was therefore treated with intramuscular ceftriaxone and oral azithromycin. Symptoms improved but did not fully resolve. The patient had undergone psychiatric evaluation, which excluded the possibility of sexual abuse.

The patient had a history of chronic constipation, with bowel movements every 3–4 days and hard stools, without a history of systemic disease or atopy. The patient's mother had a history of bacterial vaginosis (BV), which had been treated with metronidazole, while her father had no symptoms. Her caregiver was also asymptomatic. The patient was cared for only by her parents and one caregiver.

The patient's mother and caregiver assisted with genital hygiene but did not wash their hands beforehand. After defecation, the

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genital and anal areas were cleaned with water without soap, with a habit of wiping from back to front. The patient did not wear tight clothing but wore underwear made of polyester, spandex, and nylon. During the preceding three months, the patient's mother had also used boiled betel leaf water to cleanse the patient's genital area.

Physical examination showed an intact hymen without signs of trauma, minimal vulval erythema, and clear mucoid discharge from the vaginal introitus. Gram staining of the vaginal discharge showed > 30 polymorphonuclear leucocytes per low-power field, Gram-positive and Gram-negative bacilli, and Gram-positive *cocci*, without Gram-negative *diplococci* or *Candida albicans* **(Figure 1B and C)**. Aerobic culture identified *Escherichia coli* (*E. coli*), which was susceptible to co-trimoxazole and resistant to several antibiotics. *Neisseria gonorrhoeae* (*N. gonorrhoeae*) culture showed no growth. The patient was diagnosed with aerobic vulvovaginitis caused by *E. coli* and treated with co-trimoxazole (120 mg trimethoprim and 600 mg sulfamethoxazole) every 12 hours for 14 days. Her symptoms improved, although greenish discharge was occasionally still observed on her underwear. The patient and her parents were counselled regarding genital hygiene and a high-fibre diet. At follow-up after completion of treatment, no vaginal discharge was reported.

Two weeks after treatment, the vaginal discharge recurred with similar characteristics. Physical examination showed smegma in the interlabial sulcus. Following referral to an obstetrician and gynaecologist, no foreign body was identified by ultrasonography, vaginal irrigation, or vaginoscopy. Repeat aerobic culture and antimicrobial susceptibility testing yielded *Staphylococcus haemolyticus* (*S. haemolyticus*), which was treated with sultamicillin tosylate for 7 days according to the susceptibility results. The vaginal discharge improved after treatment, and the patient was advised to return if the symptoms recurred.

DISCUSSION

Vulvovaginitis is an inflammatory condition of the vulva and vagina that commonly affects premenarchal girls, with a prevalence of 70–80% among all gynaecological complaints in this age group.[3,5] The condition is often recurrent and persistent, causing anxiety in both parents and children and ultimately affecting the quality of life of the patient and her family.[1,3,4]

Several risk factors for recurrent vulvovaginitis were present in this patient. In prepubertal girls, the proximity of the anus to the vagina and exposed labia minora increase the risk of bacterial contamination of the genital area. Physiologically, the vaginal mucosa is thinner, contains less glycogen, and has a neutral pH (6.5–7.5). The paucity of *Lactobacillus* and protective antibodies facilitates colonisation by aerobic and anaerobic bacteria that may trigger inflammation. Suboptimal hygiene also increases the risk of infection.[3,5] In addition, constipation was another risk factor present in this patient.[6,7]

To date, there are no standard guidelines for the management of recurrent vulvovaginitis in children. General management includes history-taking and physical examination, collection of discharge specimens for microscopy and culture, improvement of hygiene and elimination of irritants as first-line measures, use of susceptibility-guided antibiotics, and evaluation for specific causes, including foreign bodies and sexual abuse in persistent or recurrent cases despite adequate management.[3]

The aetiology of vulvovaginitis in children is often non-specific and may involve various pathogens that directly cause infection. Bacteria commonly identified in paediatric vulvovaginitis include *E. coli*, *Streptococcus pyogenes*, *Staphylococcus aureus*, and *Haemophilus influenzae*.[3,5,8] Less commonly, sexually transmitted infections may occur as an aetiology in children who have experienced sexual abuse.[4,5] This patient had yellowish-green vaginal discharge accompanied by pruritus, which suggested aerobic vulvovaginitis. Vaginal discharge cultures identified *E. coli* and *S. haemolyticus*, aerobic bacteria associated with aerobic vulvovaginitis. Aerobic vulvovaginitis is defined as a vaginal infection caused by aerobic bacteria, characterised by active inflammation and an increased number of leucocytes in vaginal discharge. Bacterial vaginosis is more common in adult women and is predominantly associated with anaerobic bacteria without clear signs of inflammation.[8]

This patient had previously received antimicrobial therapy targeting anaerobic bacteria, antifungal treatment, and treatment for *N. gonorrhoeae* infection and non-specific genital infection. Although these treatments produced temporary improvement, her symptoms persisted and recurred. This may have occurred because aerobic vulvovaginitis had not been considered during the initial management. Delayed consideration of this diagnosis contributed to treatment failure and recurrent symptoms.[8–10] Antimicrobial treatment for aerobic vulvovaginitis should be tailored to the specific pathogen according to culture results.[3,4,9] Co-trimoxazole was selected based on the *E. coli* susceptibility results from the patient's vaginal discharge culture. She was also treated with sultamicillin tosylate according to repeat culture and susceptibility testing, which identified *S. haemolyticus*.[11]

General management includes avoiding tight or synthetic clothing, using fragrance-

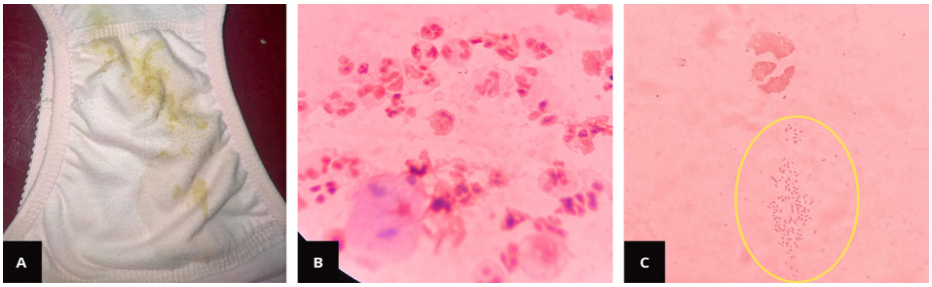


*Photo documentation by I Gusti Ayu Mirah Kusumaningrat.

Figure 1. (A) Yellowish-green vaginal discharge visible on the patient's underwear. Gram staining of a vaginal discharge swab shows: (B) Leucocytes and (C) Gram-negative bacteria (yellow circle).




free hypoallergenic soap, and maintaining genital and anal hygiene by wiping from front to back to prevent contamination from the perianal area.[1,3] Constipation management is also important and includes a high-fibre diet and adequate fluid intake to improve bowel habits, reduce bacterial colonisation, and decrease vulval irritation. Laxatives may be administered if constipation does not improve with dietary measures.[6]

Evaluation for possible sexual abuse is particularly important when cases do not respond to conventional treatment.[1,3,12] Warning signs include bloody vaginal discharge or physical trauma to the genital area,[12] neither of which was present in this patient's history. Previous examination at another healthcare facility had shown intra- and extracellular Gram-negative diplococci, which are typically associated with *N. gonorrhoeae*. Culture is known to have greater sensitivity than Gram staining for detecting *N. gonorrhoeae* and may represent an important step in excluding sexual abuse as a cause of infection.[13] The patient had not undergone *N. gonorrhoeae* culture at the previous healthcare facility; repeat culture at our facility showed no growth of *N. gonorrhoeae*. Physical examination showed an intact hymen, and psychiatric evaluation found no indication of sexual abuse. Based on the overall evaluation, sexual abuse was excluded, and management was focused on other relevant risk factors.

In addition to sexual abuse, a vaginal foreign body should also be considered.[4,14,15] Foreign bodies, including tissue paper or cotton fibres, may cause persistent local irritation and trigger chronic inflammation.[3,15] In this case, ultrasonography, vaginal irrigation, and vaginoscopy were performed, and no foreign body was identified.

Paediatric vulvovaginitis may impose a psychological burden on patients and their parents, particularly when symptoms recur. Providing reassurance to parents and the patient is important, together with education regarding the cause, risk factors, and an appropriate management plan to reduce anxiety. A comprehensive explanation that there was no indication of sexual abuse or other serious factors may reassure the parents and help them focus on the necessary care.[1,3,6,7]

Regular follow-up remains necessary to monitor treatment effectiveness and detect potential recurrent infection at an early stage. If recurrence or signs of antibiotic resistance occur, repeat culture and susceptibility testing should be performed to guide treatment adjustment. In addition, further pharmacological management of constipation was undertaken as part of a comprehensive approach to prevent exacerbations of vulvovaginitis and improve the patient's quality of life.

CONCLUSION

Recurrent vulvovaginitis in children is a complex condition influenced by multiple predisposing factors and requires a multidisciplinary approach. Identification of aerobic vulvovaginitis as the primary cause in this case was important for selecting appropriate treatment. Evaluation of predisposing factors and antimicrobial therapy in accordance with culture and resistance results were shown to provide clinical improvement. In recurrent cases, the possibility of a foreign body or sexual abuse should be investigated. Education regarding genital hygiene and management of constipation as a predisposing factor may help reduce the risk of recurrence. Families should receive comprehensive counselling regarding the evaluation results and the plan for care and follow-up. This approach provides reassurance to the patient and family, supports comprehensive recovery, and improves the patient's quality of life.

DECLARATIONS

Consent for Publication

The patient's parents provided informed consent to publish this case report and the accompanying images.

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Author Contributions

I Gusti Ayu Mirah Kusumaningrat contributed to the conception and design of the case report, collected the data, and wrote the first draft of the manuscript. Hanny Nilasari and Yudo Irawan contributed to the conception and design, critically revised the manuscript, and provided intellectual input on the discussion. Dionisius Ivan Yonathan Halim contributed to the conception and design, co-wrote the first draft, and critically revised the manuscript. All authors reviewed and approved the final manuscript.

Conflict of Interest

The authors declare no financial or non-financial conflicts of interest.

Declaration on the Use of Artificial Intelligence (AI)

The authors used ChatGPT (OpenAI) to assist with language editing and manuscript preparation. The authors reviewed, verified, and approved all manuscript content and take full responsibility for its accuracy and integrity.

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