

# Paediatric vaginal discharge

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## Abstract

Vaginal discharge in the prepubertal patient is a common symptom, and can be a source of distress for the caregiver and concern for the healthcare worker. Several factors predispose these patients to the development of recurrent vaginal discharge. Unless noticed by the caregiver, this problem can persist for long periods of time.

Making a diagnosis in the prepubertal patient requires physician skills different from those required for diagnosis in the adult population. The history may often be difficult to obtain, and at times inaccurate or inconsistent. Common anatomical variants have to be considered during examination. Sexual abuse of children continues to be a serious problem in our society. Vaginal discharge is often the only presenting symptom. A high index of suspicion is required in order to make a diagnosis. Common causes of vaginal discharge in this group of patients will be looked at. Physical examination techniques and treatment of specific causes will not be discussed here.

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### Introduction

Vulvovaginitis is by far the commonest paediatric complaint in prepubertal patients. Reports of incidence in the literature vary from 17 - 50%.<sup>1,2</sup> Several factors predispose the prepubertal girl to inflammation in the genital area. These include:

- Less protective covering of the vaginal opening by the labia majora
- Low oestrogen levels resulting in genital atrophy
- Poor hygiene
- Common dermatological conditions found in children

Presenting symptoms include a vaginal discharge, genital pain and recurrent urinary tract infections.

### Anatomy and bacteriology

Oestrogen synthesis in the foetal ovary is low at term, but maternal oestrogens readily cross the placenta and oestrogenise the neonate.<sup>3</sup> From birth through the first eight weeks of life, the female infant is under the influence of maternal oestrogens. Both the labia majora and minora show significant thickening and close off the vaginal opening.

Oestrogen levels begin to fall after the neonatal period. Levels are lowest between the ages of three and eight to nine.<sup>2</sup> With the low oestrogen levels the genital tissues become atrophic. The labia majora appear as a thin rim of normal skin circling the vaginal opening.

The labia minora are thin, almost absent and the vaginal opening lies in close proximity to the anus. The once thick hymen becomes thin and translucent.

The vaginal epithelium is mildly erythematous and may appear inflamed. After the age of nine, oestrogen levels begin to rise again, signalling the onset of puberty. Under the influence of oestrogens, the external genitalia begin to take on the shape of the adult external genitalia.

Due to the low oestrogen levels, the vaginal pH in prepubertal girls is alkaline.<sup>4</sup> The normal bacteriological flora have not been well-defined in this group of patients. Early studies reported a predominance of anaerobes. Most of these studies, however, had flawed methodologies, with small numbers of study subjects, lack of control groups and failure to control for the oestrogen status of the child. A recent study by Jaquier *et al* found no difference in the microbiological flora of both the study subjects and the control group.<sup>5</sup> Organisms commonly isolated in both groups were mixed anaerobes, *Escherichia coli*, diphtheroids and coagulase negative staphylococci.

### Differential diagnosis

The causes of vaginal discharge in prepubertal girls can be divided broadly into physiological and pathological causes.

**Table 1:** Causes of vaginal discharge

Physiological
▪ Postnatal
▪ Pubertal
Pathological
▪ Foreign bodies
▪ Infections/infestations
▪ Dermatological

### Physiological

During the early neonatal period, maternal oestrogens cause oestrogenisation of the genital tract. A mucoid vaginal discharge, often bloody, is not an uncommon finding in the first 14 days of life. The effects of oestrogen begin to recede after two weeks.<sup>2</sup> Any vaginal discharge or bleeding beyond two weeks warrants an investigation.

A rise in oestrogen levels at the onset of puberty results in the production of a physiologic leukorrhoea. This is characteristically a milky-white or clear mucoid discharge. The discharge is non-offensive and seldom necessitates the use of panty liners.

### Pathological Foreign body

Foreign bodies in the vagina are a common cause of vaginal discharge. In a review by Smith, 17,6% of patients presenting with vaginal discharge, had a foreign body in the vagina.<sup>6</sup> Common objects retrieved from the vagina include a ball of tissue paper, beads and

crayons. The vaginal discharge is typically brownish in colour and malodorous. It may occur daily, requiring the use of a panty liner. Foreign bodies at the vaginal opening can be removed with the use of forceps. Those further up the vaginal canal can be irrigated or removed through a vaginoscope. This may have to be done under light sedation or anaesthesia.

## Infections

### Fungal

As in adults, *Candida albicans* is the commonest fungal infection in prepubertal girls. Candida infections are rare in the non-oestrogenised prepubertal girl. They are common under the age of two, but become less frequent once the child is out of diapers.<sup>3</sup> Infections with candida may follow treatment with a course of antibiotics. It is characterised by an erythematous rash with raised, well-demarcated borders. The associated vaginal discharge is thick, white and is often described as resembling cottage cheese. Recurrent candidiasis should alert the practitioner to the possibility of conditions like juvenile onset diabetes and immunosuppression. A diagnosis can easily be made by a KOH (potassium hydroxide) wet-mount preparation of the vaginal discharge. Characteristic spores and hyphae can be seen.

### Bacterial

Children like to explore and pathogenic organisms can be introduced from other parts of the body. Respiratory pathogens are among the commonest isolated organisms in children with an abnormal vaginal discharge. Organisms such as *Haemophilus influenzae*, group A & B haemolytic streptococci and *Streptococcus pneumoniae* are commonly cultured. Infections in the genital tract may follow infection in the respiratory tract or skin. Infection by respiratory pathogens tends to cause a yellowish to greenish, purulent vaginal discharge.

The vaginal opening lies in close proximity to the anus in prepubertal girls. The atrophic external genitalia offer little protection, and the vagina is frequently exposed to enteric organisms. Wiping the perineum from anus to vagina results in faecal contamination of the vagina. Recurrent bouts of gastroenteritis, especially common in immunocompromised children, may result in recurrent infections. *Shigella flexneri* is an unusual cause of infection in young children. It causes a mucopurulent, sometimes bloody vaginal discharge. *Escherichia coli* infection causes a thin, watery

foul smelling discharge. Infections may follow an episode of diarrhoea.

A vaginal discharge may be the only manifestation of a sexually transmitted disease in an abused child. In the study by Robinson, all the girls with *Neisseria gonorrhoeae* or *Trichomonas vaginalis* had vaginal discharge.<sup>9</sup> Two thirds of those with *Chlamydia trachomatis* also had a vaginal discharge. *Neisseria gonorrhoeae* infection produces a purulent, thick yellow discharge. *Trichomonas* is expressed clinically as a frothy, watery-yellow or green discharge. Children born to mothers infected with chlamydia may carry the organism for up to 18 months.

In making a diagnosis, two specimens of the discharge should be taken – one for side-room tests and the other for culture. Motile flagella can be seen on a saline wet-mount in cases of trichomonas. Gonococcus and chlamydia are intracellular pathogens and can be identified by means of Gram's stain and culture. Antibiotics should ideally be used only if a pure or predominant growth is identified.<sup>10</sup>

### Viral

Viral infections are less common than those caused by bacteria and fungi. The herpes simplex virus is the most common pathogen and can be transmitted vertically during labour. Beyond the neonatal period, the presence of herpes indicates a need to look for sexual abuse. Infected children present with painful vulvar eruptions associated with a thin, watery vaginal discharge. Diagnosis is usually clinical but can be confirmed by a rising serum antibody titre or multinucleated giant cells on vaginal cytology.<sup>4</sup>

### Protozoal

*Enterobius vermicularis* (pinworm) is a common infestation in young girls. It causes a severe pruritis, associated with a thin, colourless discharge. The "sellotape" test is advocated as a means of making a diagnosis, but the yield is usually low. The worms can be seen under bright light as they come out at night to lay eggs.


### Dermatological

Contact or allergic vulvitis may lead to significant pruritis with scratching and excoriation resulting in a vaginal discharge. Offending irritants include bubble baths, perfumed soaps, laundry detergents, ointments and lotions. Infrequent changing of diapers leads to nappy dermatitis. A proper history should


be taken to identify the irritant. A short course of topical hydrocortisone for a week may be considered, should the pruritis persist after removal of the irritant.

A rare cause of vulvar pruritis in prepubertal girls is lichen sclerosus, a condition normally seen in menopausal women. The vulva is characteristically white and atrophic. It tends to be bilateral and symmetrical, giving an hourglass appearance in the vulva.

## Conclusion

Vaginal discharge is a common complaint in paediatric gynaecology. Symptoms are usually present for prolonged periods before help is sought. Smith reported an average of 13.7 months before presentation.<sup>6</sup> Children lack the knowledge about abnormal vaginal discharges and are therefore less likely to report the symptoms early on. 60-80% of cases are due to non-infective causes.<sup>2,4,10</sup> A good history can be difficult to obtain but is important in making a diagnosis. The normal anatomical variations should be considered during the physical examination. Vulvar hygiene can never be overemphasised as a first step in the management of all cases. The possibility of sexual abuse should always be kept in mind. 

See CPD Questionnaire, page 34

 This article has been peer reviewed

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