Review Prepubertal vaginal discharge

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Key content:
• Vaginal discharge is the most common reason for referral of a prepubertal girl to a gynaecologist.
• Non-specific bacterial vulvovaginitis is the most frequent cause; however, less common causes must be excluded.
• Associated symptoms include soreness and itching, which can be chronic and distressing.
• Vulval hygiene and the use of appropriate emollients form the cornerstone of successful management.

Learning objectives:
• To learn how to assess a child with vaginal discharge.
• To understand common and less common aetiologies.
• To be able to apply sensible and appropriate management.

Ethical issues:
• When should child sexual abuse be suspected?
• When should child protection be sought?

Keywords non-specific bacterial vaginitis / prepuberty / vaginal discharge / vulval hygiene / vulvovaginitis
Introduction
The incidence of troublesome vaginal discharge in prepubertal girls is unknown; however, it is the most common gynaecological complaint in this age group. The most frequent age of referral is between 3–10 years. The majority of girls are diagnosed and treated by their general practitioner and only come to the attention of a gynaecologist when the symptoms are resistant to treatment or are recurrent.

Vaginal discharge can be very distressing to a child, especially if associated with discomfort. In addition, parents are often highly anxious, particularly if the symptoms have been present for several weeks or months. Vaginal discharge has been associated with pelvic infection, lack of cleanliness and sexual abuse; these are all factors about which parents will be very concerned.

Prepubertal anatomy
Prepubertal anatomy plays a major aetiological role in vaginal discharge, especially where it is the result of infection. In the prepubertal female the labia are small, undeveloped and there are no labial fat pads or pubic hair. The anus is anatomically very close to the vagina. Thus, there is the risk of faecal contamination, which can lead to infection. In addition, the vulval and vaginal skin are hypoestrogenic and, therefore, thin and delicate. The squamous epithelium is undifferentiated and unestrogenised and the pH is neutral. All these factors make the vagina and vulva more susceptible to inflammation and infection.

Gynaecological examination of the prepubertal girl
This must be done with sensitivity and gentleness. If the girl is very small the examination can be done with her on her mother’s lap. However, if older she should lie on the couch with her legs in the frog-leg position. Gentle separation and retraction of the labia should allow visualisation of the external genitalia, introitus and hymen. Discharge can pool in the posterior fourchette and a swab can be taken from this area. Standard swabs used in adults for high vaginal swabs may be too large, in which case, a small, wire, cotton-tipped swab should be used.

Causes of vaginal discharge
Vulvovaginitis is the most common cause of prepubertal vaginal discharge and can be infective or chemical. Other rare causes include insertion of a foreign body and vaginal or vulval tumours. Non-gynaecological causes, such as threadworm infection, must be considered, as well as unusual congenital anomalies such as ectopic ureters. (See Box 1).

Vulvovaginitis

See Figure 1.

Signs and symptoms
The most common symptom is vaginal discharge, which occurs in the majority of girls (62–92%). The discharge can be clear, yellow or green and may be offensive smelling. Other symptoms of vulvovaginitis include redness and soreness (74–82%), pruritus (45–58%) and dysuria (19%). Vaginal bleeding is an unusual symptom of
vulvovaginitis (5–10%)\(^1\) and must be investigated appropriately. More serious causes, such as tumours, precocious puberty and sexual abuse, must be excluded before attributing bleeding to vulvovaginitis.

On inspection of the genital area, the skin around the vagina will look reddened and inflamed and this may extend around the anus. There may be a pool of discharge at the posterior fourchette. In addition, there may be excoriation of the genital area if it is itchy.

**Causes of vulvovaginitis**

**Non-specific bacterial vulvovaginitis**

Most commonly, the vulvovaginitis is non-specific, with mixed bacterial flora.\(^5\)\(^–\)\(^8\) Vaginal cultures will be reported as non-specific skin flora or will show mixed anaerobes or coliforms from the gut. Poor personal hygiene is a common trigger factor, as the onset of symptoms usually occurs when the child has responsibility for her own anal hygiene; for example, on first attending nursery or school.\(^4\)\(^–\)\(^5\)

**Infective causes**

The most common infective agent to be found in prepubertal vaginal discharge is the group A beta-haemolytic streptococcus.\(^1\)\(^–\)\(^9\) This organism has been isolated in 11–18% of vaginal aspirates in various studies.\(^3\)\(^–\)\(^6\) It has been suggested that the epidemiology is related to an upper respiratory tract infection or sore throat which is transmitted from the throat to the vulva.\(^1\)\(^–\)\(^4\) The onset can be quite acute, with a seropurulent vaginal discharge, which may be associated with dysuria and an inflamed vulva. Group A streptococci are sensitive to penicillin; erythromycin is a suitable alternative for a girl who is sensitive to penicillin.\(^5\)\(^–\)\(^6\) Relapse can occur in up to a third of treated individuals. Topical antibiotics are of no use for treatment of vaginal infection.

*Haemophilus influenzae* is the second most common cause of vulvovaginitis.\(^1\)\(^–\)\(^9\) The most common is biotype II, which was isolated in 57% of isolates in one study.\(^1\)\(^–\)\(^9\) Girls are more likely to have recurrent symptoms with *Haemophilus*. Most strains are sensitive to penicillin; resistance is increasing, therefore, clinicians should be guided by sensitivity test results.

Attempts have been made to clarify the normal vaginal flora in prepubertal girls. Organisms considered non-pathological include diphtheroids, *Bacteroides* and *Staphylococcus epidermidis*. If one of these organisms is found in an asymptomatic child, antibiotic treatment is not appropriate.

*Candida* is a very uncommon cause of vulvovaginitis in the prepubertal girl, although many cases are treated with antifungals by the mother or general practitioner—usually without benefit. In most studies reporting *Candida* in children, those girls with candidiasis isolated were pubertal.\(^7\) There tends to be some other predisposing factor in association with the presence of *Candida*; for example, a recent course of antibiotics, diabetes or the wearing of nappies. It has been suggested that vaginitis associated with *Candida* is more likely to be associated with sexual abuse.\(^8\) If present, the symptoms are similar to those of adult women: there is pruritus and a white, curd-like discharge. Inflammation of the vulva and perineal area and white plaques adherent to the vagina often occur. Treatment is usually with a topical antifungal agent.

**Systemic infection**

Some systemic infections such as varicella, measles and rubella can cause an associated vulvovaginitis, which can be severe.\(^9\) This has also been reported with bacterial infections such as diphtheria and shigella. Resolution is usually complete, although secondary bacterial infection from vulval organisms can occur and prolong symptoms.

**Vulval dermatitis**

Vulval dermatitis most commonly causes vulval soreness but this can be associated with discharge. Irritant dermatitis has been reported as a result of using soap or bubble bath and playing in a sandpit, as well as prolonged contact of urine and faeces against the skin.\(^10\) Avoidance of the irritative agent should lead to resolution of symptoms. Allergic contact dermatitis may develop as a result of prolonged exposure to irritant substances, such as perfumes and clothing dyes. Accurate allergy patch testing may help to identify the culprit.

**Vulval skin disorders**

Vulval skin conditions can also present with vulval irritation and soreness. Vaginal discharge is usually a less prominent feature, although this can occur, especially if the skin is traumatised due to scratching. Atopic eczema can affect up to 15% of young children and vulval symptoms are not uncommon. Emollients are the mainstay of treatment but the use of mild or moderate strength steroid cream may be necessary for short periods. Lichen sclerosis usually presents with itching and soreness. Vaginal discharge is unusual unless there is a secondary infection but bleeding can occur from purpura and blister formation. It is essential to make the correct diagnosis as the traumatised appearance of the skin can raise suspicions of sexual abuse.

**Treatment of vulvovaginitis**

Symptoms of vulvovaginitis can last for months or even years. Antibiotics should be used when a pure growth of a specific pathogenic organism has been identified; the clinician should be guided by the
sensitivity results. However, the mainstay of treatment is careful vulval hygiene, which will relieve symptoms and help to prevent recurrence.2,3,9

It is essential that the parents and child are given advice about good toilet habits. The girl should be taught to wipe from front to back after defaecation and when at home the parents should check for cleanliness.2,3,9 Carrying out anal hygiene with plain water may help. It is important to wear cotton underwear and avoid scented bubble baths, soaps and Lycra® except for short periods for sporting activities. Tight jeans should also be avoided and wearing skirts encouraged.1,5 Barrier creams such as nappy creams are useful, as are emollients to protect the vulval skin from further irritation.

Symptoms can be persistent and may only resolve completely with the approach of puberty and increasing estrogenisation of the vulva and vagina. Parents may find a simple fact sheet helpful (Box 2). There is no evidence that persistent vulvovaginitis has any long-term implications for sexual or reproductive health and it is important to reassure parents of this.

### Foreign bodies

Foreign bodies are an unusual cause of vaginal discharge. They should be considered in a girl who keeps presenting with recurrent or chronic vaginal discharge and in the presence of bloodstained or very offensive discharge.3 A foreign body within the vagina acts as a stimulant for vaginal discharge and as a focus for infection. The most common foreign body is small pieces of tissue paper but other items that have been removed include coins, beads and small toys; for example a Barbie doll shoe.6 A vaginal discharge with an irritant vulvitis is usually the first sign. The discharge may be purulent, foul smelling and occasionally bloodstained.

Occasionally, a foreign body can be seen on inspection of the hymenal opening. If a foreign body is suspected, a vaginoscopy under general anaesthetic is necessary.1 Retrieval of the foreign body usually leads to complete resolution of symptoms.

### Differential diagnosis

See Box 3.

#### Threadworms

Threadworms (pinworms) mainly present with nocturnal perineal pruritus. However, excoriation of the skin can lead to inflammation, soreness and discharge. Infections with threadworms are more common in areas of overcrowding and they can be associated with poor hygiene. Treatment is with systemic therapy using mebendazole and this is worth considering on an empirical basis if symptoms appear to be characteristic.1

#### Urological causes

Urethral prolapse can cause a bloodstained discharge, which can be mistaken initially for vaginal discharge. This condition is more common in girls of African origin. Local estrogen cream usually causes resolution, although occasionally surgical excision is required.

Ectopic ureter is a rare condition that can be associated with a duplex renal system. The ectopic ureter can drain into the vagina and may present with a persistent, watery vaginal discharge. A careful clinical examination or vaginoscopy may reveal the source of the discharge. Imaging of the urinary tract is sometimes helpful but if an ectopic ureter is suspected, referral of the girl to a paediatric urologist is necessary.

#### Tumours

Rare tumours such as embryonal rhabdomyosarcoma, mesonephric carcinoma and clear cell adenocarcinoma of the vagina or cervix all present with a bloodstained discharge. Sometimes a tumour is visible at the introitus. Vaginal bleeding or bloodstained vaginal discharge needs urgent referral to an appropriate specialist for evaluation.

#### Sexual abuse

Sexual abuse must always be considered in girls with recurrent or persistent vaginal discharge or bleeding. It is important that the clinician specifically but sensitively asks the mother if she has any concerns about sexual abuse. In addition, if the child is old enough it is important to ask her about any inappropriate touching of the genital area. All Trusts are required to have written policies on suspected child abuse as well as a named, responsible clinician. If child sexual abuse is suspected from the history or examination findings, immediate referral for assessment...
through the appropriate channels is essential. Identification of organisms associated with sexually transmitted diseases; for example, *Neisseria gonorrhoeae* or *Chlamydia trachomatis*, should mean automatic referral for child protection assessment. Trichomonas vaginalis and Gardnerella vaginalis are unlikely findings in prepubertal girls in the absence of sexual abuse. Non-sexual transmission is possible but the presence of these organisms should raise the possibility of sexual abuse and trigger referral for appropriate assessment. It is very important to remember that the majority of children who are abused do not have any physical complaints related to trauma or infection.

**Conclusion**

Vaginal discharge in the prepubertal girl is very common and often no pathogen is identified. These girls usually only present to a gynaecologist after initial treatment by their own general practitioner and a recurrence of symptoms. This is very stressful for the girl and her parents because of the uncertainty of the cause, repeated visits to see doctors and possible further implications. One must always be aware of the rare and unusual but most of the time symptoms will be caused by a non-specific vulvovaginitis that responds to antibiotics, simple good general hygiene, emollients and support.

**References**