

Vulvovaginitis and other common childhood gynaecological conditions

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ABSTRACT

Paediatric gynaecological problems, especially those involving the vulvar area, are common in childhood. The conditions frequently seen include recurrent bacterial vulvovaginitis, vulvar irritation, labial adhesions and dermatological conditions. The presentation and management of these conditions will be reviewed.

INTRODUCTION

Vulvar conditions causing vulvar and vaginal irritation and discharge are common in prepubertal girls and are seen frequently in general practitioners' surgeries and out-patient clinics. Such presentations include

- ▶ Vulvovaginitis
- ▶ Vulvar irritation
- ▶ Labial adhesions
- ▶ Threadworms
- ▶ Skin conditions
 - ▷ Lichen sclerosus.

Less frequently, girls will present with the worrying symptom of vaginal bleeding and this too will be considered.

VULVOVAGINITIS

Vulvovaginitis is the most common condition which causes girls to present to a paediatric gynaecologist.¹ The girl complains of vaginal discharge and vulvar soreness or irritation. While not serious, it often causes anxiety because of the longstanding nature of the complaint and concern that the symptoms might indicate serious underlying pathology.

Vaginal discharge is physiological in neonates due to the effects of maternal oestrogens. Discharge in this age group is usually clear, white and odourless and settles within a couple of weeks following delivery when the oestrogen levels drop. Dropping oestrogen levels may also cause the discharge to be blood stained as the endometrium, also stimulated by oestrogen, breaks down.

In contrast, the discharge of vulvovaginitis is offensive and is yellow, green or brown in colour and caused by bacterial infection.

In its less common presentation, vulvovaginitis is associated with other infections such as a sore throat and settles as the initial illness clears. A prior personal or family history of sore throat in over half of the girls presenting with discharge

was reported in one study.² Severe vulvovaginitis has also been reported in association with systemic infections such as varicella, measles and rubella.³

More commonly, however, the condition is recurrent and not associated with infection elsewhere. This is recurrent bacterial vulvovaginitis.

RECURRENT BACTERIAL VULVOVAGINITIS

Recurrent bacterial vulvovaginitis occurs in prepubertal girls and is reported most commonly between the ages of 2 and 7 years.⁴

An understanding of the underlying genital tract anatomy and physiology in prepubertal girls is helpful to understand the condition and provide good management and advice.

Anatomy

In the neonatal girl, under the influence of maternal oestrogen, the fat pads of the labia majora are well developed and the labia minora are thick and oedematous-looking (figure 1). With the loss of maternal oestrogen over the first few weeks following delivery,⁵ the labia majora become flattened and the labia minora thin and attenuated and have a tendency to flare outwards. This causes the vaginal introitus to be open and offer no physical barrier to infection (figure 2). With this anatomy, the close proximity of the anus allows easy transfer of bowel organisms particularly in this age group when girls are beginning to take responsibility for their own hygiene.

Similarly because of maternal oestrogens in the neonatal girl, the vaginal epithelium is multi-layered and thick, with numerous glycogen cells, but with low hormone levels in the prepubertal years, the epithelium becomes thin and atrophic, losing the glycogen. This also predisposes to infection.

Physiology

Maternal oestrogens promote the presence of lactobacilli which cause the vaginal pH to be acidic. With the loss of oestrogen, the lactobacilli are lost and vaginal pH becomes less acidic, again reducing the resistance to infection.

The low level of oestrogen in the prepubertal girl is therefore the main reason for this condition being so common in this age group and for

its repeated occurrence until the girl starts producing her own oestrogen as she approaches puberty.

Understanding of the normal bacterial flora of the vagina in this age group is limited as studies have failed to differentiate between prepubertal and peripubertal girls, include both symptomatic and asymptomatic girls, and sometimes also include girls who are sexually active.

One prospective study which did include asymptomatic girls as controls found that swabs from 77% of these girls grew aerobic bacteria, 65% showed anaerobic bacteria and 45% grew both.⁶ The specific organisms identified were *Staphylococcus epidermis* (35%), enterococci (29%), *Streptococcus viridans* (13%) and lactobacilli (39%). Similar organisms were found, but in higher percentages, in girls who presented with vulvovaginitis. Anaerobic organisms and yeasts were more common in symptomatic girls, while lactobacilli were less common.



Figure 1 The appearance of the external genitalia in a neonatal girl showing the well-developed labia majora and the thick, oedematous appearance of the labia.



Figure 2 The appearance of the external genitalia of a prepubertal girl showing the flattened labia majora and thin attenuated labia minora. Note the open vaginal introitus offering no physical barrier to infection.

Identification of the organism involved can be difficult. Although many techniques have been described,⁷ it is very difficult to obtain a swab from the vagina of a prepubertal girl without causing extreme discomfort, even for experienced clinicians. Swabs can be obtained from discharge on the perineum but if a pure culture is required, examination under anaesthetic should be performed.

Other studies identifying organisms causing infection are Group A β -haemolytic streptococcus,² bowel organisms and *Haemophilus influenza*.^{4 8 9} *Candida* spp. was not identified as a major cause of infection in prepubertal girls in any of these studies.

PRESENTATION

The commonest presenting symptom is vaginal discharge, followed by vulvar redness, and burning, itching and soreness. Most girls have more than one of these symptoms.⁸ The discharge is yellow, brown or green in colour and is intermittent and recurrent. The condition varies in severity from causing minimal symptoms to being sufficiently severe to prevent sleep or even waken the girl during the night. Examination of the vulva shows appearances of varying severity, from few changes to marked inflammation often with lichenification or excoriation (figure 3).

The inflammation and excoriation may cause dysuria, often leading to an initial misdiagnosis of urinary tract infection.

The girl usually presents after a few episodes. There is frequently a history of treatment with antifungals in the mistaken belief the condition is due to candida infection.

In young girls, examination may best be performed with the girl lying supine in her mother's lap. Older girls are best examined lying on the couch with their legs in the frog-leg position. The whole perineum and perianal area should be inspected. In either position, gentle separation of the labia will allow the hymen to be inspected and a swab taken from the perineum or fourchette. Thought should be given to whether it is essential to make an accurate bacterial diagnosis as individual episodes may be due to new infections and involve different organisms.

While examining the perineum, it is also useful to examine the girl's underwear for evidence of discharge and also to assess levels of hygiene.

MANAGEMENT

Recurrent vulvovaginitis is difficult to eradicate. Explaining to the parents the cause of the condition, its recurrent nature and that the girl may be approaching puberty before it resolves completely is essential. General advice about hygiene, if appropriate, should be given, particularly ensuring that the girl's bottom is properly cleaned after defaecation, washing if necessary, and that



Figure 3 The appearance of the vulva in a prepubertal girl with recurrent bacterial vulvovaginitis showing marked vulvar and perianal inflammation with lichenification.

she wipes from forward to back. Constipation aggravates the condition and should be treated.¹⁰ Wearing cotton underwear, avoiding tight leggings and jeans, wearing nightgowns instead of pyjamas and avoiding wearing pants in bed should all be considered. The use of bland emollient creams such as zinc and castor oil provide a barrier and may reduce irritation and dysuria. As this amount of information may be difficult for the girl's mother to absorb, the use of an advice sheet which the parents can take away with them is helpful.

While the condition is caused by bacteria, treatment with antibiotics should only be given if a pure or predominant growth of a pathogenic organism is obtained.¹¹ Topical antibiotic creams are not indicated.

It is important to give parents time to talk about their anxieties regarding their daughter's condition. Most will have had the problem for some time before attending a hospital clinic and have been led to expect an examination under anaesthesia will be performed. Such examination is only required when there is blood staining of the discharge, where there is a genuine concern about a potential foreign body, or if there is a need to identify the organism, such as in girls in whom sexual abuse is suspected.

Many mothers will be concerned about sexual abuse and it is important to provide an opportunity to discuss this. Most parents feel isolated, sure that they are the only parents with a daughter with the problem. Some are concerned that the discharge has the same significance as that found in adult women and that the girl's future fertility is jeopardised.

The finding of organisms associated with sexually transmitted infections such as gonococcus, chlamydia or *Trichomonas vaginalis* on swab culture is highly suggestive of sexual abuse and referral should be made to the appropriate child protection doctor in accordance with local guidelines.¹² The significance of *Gardnerella vaginalis* is less clear, however. It is unusual, but not unheard of, for the organism to be present in the absence of sexual activity and sexual abuse must be considered.¹³ It is important to remember that physical findings are only present in 4% of children who have been abused.¹⁴

There is no evidence that treatment with topical oestrogen is of benefit in girls with recurrent vulvovaginitis.

VAGINAL BLEEDING

Vaginal bleeding in a prepubertal girl is uncommon but must always be assumed to be pathological and should be thoroughly investigated. It is, however, unusual to identify a specific cause, in most cases the presumption being that it is related to recurrent vulvovaginitis. Other causes include vaginal or cervical tumour, a variant of precocious puberty or a foreign body.

Vaginal or cervical tumours such as embryonal rhabdomyosarcoma, clear cell carcinoma of the vagina or mesonephric carcinoma are extremely rare. They may present with intermittent vaginal bleeding, sometimes associated with the passage of tissue. Diagnosis is made by examination under anaesthesia and biopsy for histological examination.

Variations of precocious puberty, such as isolated menarche, may occur.¹⁵ These girls present with intermittent, often regular, vaginal bleeding varying in amount from a few hours spotting to several days bleeding requiring sanitary protection. There are no other signs of puberty. Diagnosis is by exclusion of other causes of bleeding by investigation including hormone profile, ultrasound of the pelvis and examination under anaesthetic.

If a specific cause is identified for vaginal bleeding, it is most likely to be a foreign body, being found in over 90% of girls who present with blood stained discharge.^{16 17}

Ultrasound or x-ray examination is not sufficient to exclude a foreign body as objects such as paper and cotton wool will not be identified. Examination under anaesthesia is required. Removal of the foreign body usually results in complete resolution of symptoms.

Examination under anaesthesia can be undertaken using a nasal speculum, a paediatric cystoscope or a hysteroscope.

VULVAR IRRITATION

Vulvar irritation without discharge is also common. In one study, 33% of girls attending a dermatology clinic had irritation due to either atopic or irritant dermatitis.¹⁸ Irritant dermatitis may

be due to poor hygiene, but may also be due to chemicals found in such items as soap powder, perfumed soaps, fabric conditioner or bubble bath. While patch testing may be helpful, detective work may be required to identify the responsible chemical.

LABIAL ADHESIONS (ALSO CALLED LABIAL FUSION OR LABIAL AGGLUTINATION)

Labial adhesions or labial fusion is a very common symptom in the 2–4-year-old age group, and although much less common, it may persist until later childhood years. An incidence of 1.8–3.3% has been reported,¹⁹ although this is almost certainly an under-reporting as many girls with labial adhesions are asymptomatic. One study in which girls were examined with a colposcope reported an incidence of 38.9%, but some labial fusions were only 2 mm in length.²⁰

Adhesions are thought to be secondary to vulvovaginitis or other vulvar irritation in which the skin becomes so excoriated and denuded that during the healing process the labial edges fuse together, the adhesions usually developing posteriorly and moving forwards. Most girls are asymptomatic and the girl presents only when the mother notices the appearances when changing her nappy. Symptoms, if present, are usually vulvar irritation or soreness. The girl may also present with 'wetting' as dribbling of urine may occur as a result of urine being trapped in the vagina behind the line of fusion when the girl micturates and flowing out when the direction of the vagina changes as the girl stands up. The girl's mother is either guilt stricken that she has not noticed the abnormality earlier, assuming it has been present from birth, or panic-stricken believing that her child has no vagina and will require major reconstructive surgery. Examination of the perineum will easily allow differentiation between the two. In a child with labial adhesions, the fused labia have the appearance of a flat perineum, with a fine line seen along the line of fusion, the fused labia preventing visualisation of the hymen, clitoris or urethral meatus (figure 4). In a child with congenital absence of the vagina, the labia, clitoris and urethral meatus are easily identified and separation of the labia allows easy visualisation of the hymenal orifice but an inability to see further into the vagina.

Management includes explaining to the parents how the fusion has arisen and reassurance that it is a self-limiting condition and that the internal anatomy will be normal (although it may be necessary to perform an ultrasound for further reassurance if the parents are unconvinced). No further treatment is necessary in a girl who is asymptomatic. General hygiene advice should be given as for girls with vulvovaginitis. Specific treatment, if indicated if the child is symptomatic or if the mother prefers, is with topical oestrogen cream applied twice daily along the line of fusion, the treatment being continued until separation

occurs, which is usually within about a month of therapy initiation. Careful consideration should be given whether it is necessary to continue the treatment for longer than 3 months as systemic effects of oestrogen have been reported, although they regress after the oestrogen therapy has been stopped.²¹ Success rates vary depending on the thickness of the area of fusion but are usually around 80%.²² Betamethasone cream has been reported as a successful alternative to oestrogen²³ but is not usually recommended. The girl's parents should be warned the condition may recur, and if it does, treatment should be as before. Surgical division is rarely indicated as there is still a risk of recurrence following surgery and subsequent adhesions may be more dense. Surgery should be restricted to the very small group of girls whose symptoms persist towards puberty and those who have serious problems associated with the condition.

THREADWORMS

Threadworms (*Enterobius vermicularis*) are well recognised as a common cause of anal irritation, but it is less well recognised they can also cause vulvar symptoms. The classic presenting symptoms are peri-anal and vulvar irritation. Adult worms emerge from the anus at night and lay their eggs around the anus and vagina, causing the symptoms of irritation to be worse at night. Diagnosis and subsequent treatment is usually based on symptoms alone, but if it is wished to confirm the diagnosis, the sticky tape test is the investigation of choice. Sticky tape is applied over the anus at night, removed in the morning and transferred to a glass slide. Adult worms and ova can be seen on microscopic examination. Treatment is with a single dose of mebendazole 100 mg given to all members of the family over 2 years of age.

DERMATOLOGICAL CONDITIONS

Any dermatological condition can affect the vulvar area but the commonest in childhood and adolescence are eczema and lichen sclerosis.

As the appearances of eczema can vary and may not be present at the time of examination in the clinic, it is important to enquire in a girl presenting with vulvar irritation about the presence of skin conditions such as eczema elsewhere on the body, which may provide a clue about the diagnosis.

Napkin rash is common but rarely presents to the gynaecologist, being more usually dealt with in primary care settings. Napkin rash is caused by irritation of the skin by ammonia from urine. Secondary infection with bacteria or candida is common. The condition is managed by general hygiene advice and barrier creams.

LICHEN SCLEROSUS

Lichen sclerosis is a chronic skin condition, thought to be auto-immune in origin. It can

affect any area of the body but is commonly seen in the ano-genital area. It can affect women of all ages but is most common at the extremes of life – in prepubertal girls and in postmenopausal women. The girl presents with intractable vulvar irritation, the condition being found in 18% of prepubertal girls presenting in this way.²⁴ The diagnosis is frequently delayed as clinicians, assuming the irritation is due to vulvovaginitis or candida, fail to examine the perineum.

Examination of the vulva shows the characteristic appearance of irregular, shiny pearly-white macules or papules which can coalesce into larger plaques (figure 5). There are often associated areas of erosion, ulceration and purpura and, in severe cases, haemorrhagic bullae. The appearances in severe cases can lead to a mistaken diagnosis of sexual abuse (figure 6).^{25 26}

Biopsy is not usually required as the clinical appearances are diagnostic. However, if a biopsy is performed, histological examination shows hypoplasia of the epidermis with flattening of the rete pegs, hyperkeratosis on the surface of the epidermis with oedema and lymphocytic infiltration in the deeper dermis.

Treatment is with potent topical steroids, such as clobetasol propionate 0.05%, applied twice daily for periods of up to 2 weeks. Symptoms usually resolve fairly quickly within a few weeks, with 96% of patients responding to this therapy.²⁷ Maintenance therapy is not required.²⁴ While in many girls the condition resolves at puberty, this is not always the case and long-term follow-up may be required.^{28 29} As the condition can involve the skin of the peri-anal area causing

constipation, treatment with laxatives may also be required.

CONCLUSION

Gynaecological conditions are common in prepubertal girls but are rarely serious. They do, however, cause concern to the girl's parents and careful, informed and sensitive management is required. Child sexual abuse is frequently feared



Figure 5 Mild lichen sclerosus showing the pearly white appearance of the skin.



Figure 4 Labial adhesions showing the appearance of a 'flat' perineum, with a fine line visible along the line of fusion.



Figure 6 Severe lichen sclerosus showing areas of erosion and petechiae.

by the parents and their fears need to be appropriately addressed.

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