Gynaecological Disorders of Childhood and Adolescence

Gynaecological problems in the prepubertal child and at adolescence create great levels of anxiety in parents particularly, but fortunately very few of these disorders could be considered common.

However, when they do present it is important that the clinician has an understanding so that appropriate advice may be given to the patient and management is frequently through simple means.

These disorders fall into two groups:
1. Those related to prepubertal girls.
2. Those of adolescence.

Disorders of prepubertal child

1. Vulvo-vaginitis

This is the only gynaecological disorder of childhood which can be thought of as common.
- Its aetiology is based on opportunistic bacteria colonizing the lower vagina and inducing an inflammatory response.
- The lack of labial protection and the close apposition of the anus mean that the vulva and lower vagina are constantly exposed to faecal bacterial contamination.
- The hypo-oestrogenic state in the vagina means that there are no lactobacilli and therefore the vagina has a resulting pH of 7 making it an ideal culture medium for low virulent organisms.
- The childhood problems of poor local hygiene compound the risk of low-grade non-specific infection.

Causes of vulvo-vaginitis in children

1. The vast majority of cases are due to nonspecific bacterial contamination, although the other causes should be remembered.
2. Candidal infection in children is extremely rare, although because it is a common cause of vulvo-vaginitis in the adult, it is a common misdiagnosis in children.
- *Candida in children is usually associated* with diabetes mellitus or immunodeficiency and almost entirely related to these two medical disorders.
3. The presence of viral infections, for example, herpes simplex or condyloma acuminata, should alert the clinician to the possibility of sexual abuse.
4. Vulval skin disease is not uncommon in children, particularly atopic dermatitis in those children who also have eczema.
   - Referral to a dermatologist is appropriate in these circumstances.
   - Lichen sclerosis is also seen in children and may cause persistent vulval itching. The skin undergoes atrophy and fissuring and is very susceptible to secondary infection.
5. Sexual abuse in children may present with vaginal discharge.
-Any child who has recurrent attacks of vaginal discharge should alert the clinician to this possibility.

-However, as non-specific bacterial infection is a common problem in children the clinician must proceed with considerable caution in raising the possibility of sexual abuse.

-Only those bacterial infections related to venereal disease for example, gonorrhea, may be cited as diagnostic of sexual abuse.

6-Enuresis :It is important that the clinician remembers that many girls suffer from urinary incontinence, particularly at night, and this creation of a moist vulva allows secondary irritation by bacteria leading to vulvo-vaginitis.

**Causes of vulv-ovaginitis in children**

1.Bacterial
   -Non-specific – common
   -Specific – rare

2.Fungal – rare
   -e.g. *Candida of vulva only*

3.Viral — rare

4.Dermatitis
   -Atopic
   -*Lichen sclerosis*
   -Contact

5.Sexual abuse

6.Enuresis

7.Foreign body

**Diagnostic procedures:**

-There are two aspects of the diagnosis in this condition in children.

1- Inspection of the vulva and vagina.

-It is imperative that the clinician has good illumination, particularly if there is a history of the possibility of a foreign body being in the vagina.

-It is usually possible to examine the vagina through the hymen using an otoscope.

- This may well allow the diagnosis of a foreign body to be made.

2.The taking of bacteriological specimens.

-This can be extremely difficult in a small child, as it is unlikely that the child will be cooperative.

- The best way to take a bacteriological specimen is to use a pipette.

- The pipette allows 1–2 ml of normal saline to be expelled into the lower part of the vagina, the tip of the pipette having been passed through the hymenal orifice.

- The fluid is then aspirated and sent for bacteriology.
-If a diagnosis of pin worms is to be excluded, then a piece of sticky tape over the anus early in the morning before the child gets out of bed will reveal the presence of eggs on microscopy.

**Treatment**

-The vast majority of children do not have a pathological organism.

-The primary treatment in this group is advice about perineal hygiene.

-The child must be taught to clean her vulva, particularly after defaecation from front to back, as this avoids the transfer of enterobacteria to the vulval area.

-After micturition the mother and child should be instructed to clean the vulva completely and not to leave the vulval skin wet as this damp, warm environment is an ideal culture surface for bacteria that cause vulvo-vaginitis.

-Excessive washing of the vulva must be avoided as this leads to recurrent exfoliation and vulval dermatitis.

-During acute attacks of non-specific recurrent vulvo-vaginitis, children often complain of burning during micturition due to the passage of urine across the inflamed vulva.

-The use of barrier creams in these circumstances may be very useful.

**2. Labial adhesions:**

-Labial adhesions are usually an innocent finding and a trivial problem, but its importance is that it is frequently misdiagnosed as congenital absence of the vagina.

-The physical signs of labial adhesions are easily recognized.

-In the post delivery hypo-oestrogenic state the labia minora stick together in the midline, usually from posterior forwards until only a small opening is left anteriorly through which urine is passed.

-Similar adhesions sometimes bind down the clitoris. It may be difficult to distinguish the opening at all.

-The vulva has the appearance of being flat, and there are no normal tissues beyond the clitoris evident.

-There are usually no symptoms associated with this condition, although older children may complain that there is some spraying when they pass urine.

-The aetiology of the hypo-oestrogenic state means that they are never seen at birth, and instead occur during early childhood.

-As late childhood ensues and ovarian activity begins there is spontaneous resolution of the problem.

In the majority of cases no treatment is required and the parents should be reassured that their daughters are entirely normal.

-In those children in whom there are some clinical problems local oestrogen cream can be applied for about 2 weeks.

-In some rare circumstances this will not resolve the problem, but at the end of the oestrogen therapy the midline is so thin that gentle separation of the labia may be undertaken using a probe, and this procedure causes no discomfort to the child.

-Application of a bland barrier cream at this stage will prevent further adhesion formation.
Finally, in taking a history it is important to establish that there has not been any trauma to the vulva as very rarely labial adhesions may be the result of sexual abuse.

**Puberty:**

Puberty is defined as the period of time during which secondary sexual characteristic develop, menstruation begins and the psychological outlook of the girl changes as she develops a more adult aspect to herself.

-The end result of puberty is the establishment of the fully physically mature adult woman capable of reproductive performance and fully psychologically developed as an adult.

-During childhood, the hypothalamic-pituitary-ovarian axis is suppressed and levels of GnRH, FSH and LH are very low.

-From the age of 8-9 years, GnRH is secreted in pulsations of increasing amplitude and frequency. These are initially sleep-related, but as puberty progresses, these extend throughout the day.

-This stimulates secretion of FSH and LH by the pituitary glands which in turn triggers follicular growth and steroidogenesis in the ovary. The oestrogen produced by the ovary then initiates the physical changes of puberty.

-The exact mechanism determining the onset of puberty is still unknown, but it is influenced by many factors including race, heredity, body weight and exercise.

**The physical changes of puberty are divided into five stages:**

1. Breast growth (thelarche).
2. Pubic hair growth.
3. Axillary hair growth.
4. The growth spurt.
5. Onset of menstruation (Menarche).

-Breast development, pubic hair and axillary hair development are classified by the Tanner system into five stages.

-Tanner stage 5 describes the mature breast, full pubic hair development and the establishment of axillary hair.

-The growth spurt in children occurs about 2 years earlier in girls than boys and in most girls occurs around the age of 11.5–12 years.

-Growth velocity at this stage reaches a peak of 8 cm/year, but the production of oestrogen from the ovary at this time eventually closes the epiphyses such that final height is achieved at around the age of 14.5 years.

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<th>Female Breast Developmental Stages</th>
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Hair growth

-Pubic hair precedes axillary hair development and also shows four stages.

-Initially there is sparse hair on the labia; this then grows centrally and advances onto the mons pubis.

-The next stage is for the hair to spread laterally on the thigh a little, with the full adult triangular distribution as the final stage.
Menarche

- The first menstrual period is the final stage in pubertal development, and occurs in 95% of girls between the ages of 11 and 15 years.
- The average age of the menarche in the UK is 13 years, a fall in the age of menarche being noted in children in developed countries.
- This is thought to be a reflection of improved nutritional status - some researchers believing that a critical body weight must be reached before menarche is achieved.
- This theory has some merit as it is noted that moderately obese girls have an earlier menarche than those of more normal weight.
- Conversely, girls with anorexia or adhering to an intensive exercise programme may show delay in the age of menarche.
- There is no doubt that this is genetically controlled, and the release of gonadotrophin-releasing hormone (GnRH) by the neurons in the arcuate nucleus of the hypothalamus is controlled by central factors influencing DNA within the cells.
- Early menstrual cycles are in the majority anovulatory, and cycle length may vary for some considerable years after menarche.
- It may take some 5–8 years before menstrual cycle normality is established.

Abnormalities of puberty

1. Precocious puberty:
Precocious puberty is defined as the onset of secondary sexual characteristics prior to the age of 8 years.
- It is classified as either central or peripheral. Central is gonadotrophin-dependent.
- In the vast majority of girls the cause is unknown (idiopathic), although in up to 25% are due to central nervous system malformation or brain tumours.
- It is likely that this is solely due to initiation of the normal process of puberty at a premature age.
- The onset is genetically predetermined. If this genetic determinant is inappropriately timed then the normal process of puberty will occur whenever the initiation occurs.
Peripheral precocious puberty is always pathological and can be caused by oestrogen secreting tumours or exogenous ingestion of oestrogens.

Causes of precocious puberty

Idiopathic

Neurological

- Cerebral tumours
- Hydrocephalus
- Post-meningitis
- McCune-Albright syndrome

Ovarian tumours
Adrenal tumours
Gonadotrophin-secreting tumours
Exogenous oestrogen

-Some children with neurological disorders like cerebral tumours, hydrocephalus or post-meningitis or encephalitis may have an early puberty due to activation of the hypothalamus by the disease process.

-The mechanism by which this occurs remains obscure; although in the McCune-Albright syndrome, which is a disorder involving cystic bony change (polyostotic fibrous dysplasia), there is also associated endocrine dysfunction particularly of the hypothalamus and pituitary and in this condition precocious puberty is common.

-Various ovarian and adrenal tumours may be hormone secreting thus inducing secondary sexual characteristic changes, but these are not truly pubertal and are reversible on removal of the tumour.

-Cases of ingestion of exogenous oestrogen by children have also been reported, and this will indeed result in the onset of some menstrual loss in some children and again must not be considered as true precocious puberty.

**Treatment of precocious puberty:**

-In those cases of idiopathic precocious puberty the clinician is faced with the problem of reversing the normal onset of puberty.

-There can be little doubt that the treatment of choice is the use of GnRH analogues, which are extremely effective at obliterating follicle-stimulating hormone (FSH) production by the pituitary.

-By doing this, the prepubertal state is re-established and the child can remain on this therapy until aged about 11.5–12 years when the therapy can be withdrawn and the normal onset of puberty will ensue.

-Any breast or pubic hair development that has occurred prior to the diagnosis will usually be reversible as the hypo-oestrogenic state prevents further growth and in most cases this results in some resolution of early change.

-However, if the secondary sexual characteristic changes have been much greater and development is beyond Tanner stage 3, little effect can be expected by this therapy on the physical changes.

-Similar success can be achieved with those children with neurological problems.

-Children who are found to have ovarian or adrenal tumours or gonadotrophin-secreting tumours should be treated surgically and their problems will resolve.

-It is important for the gynaecologist who is presented with these problems to remember that precocious puberty is socially undesirable and social management of the case is essential.

-Very rarely would a gynaecologist opt to treat a child with precocious puberty without the help of a paediatrician. -In fact, cases of precocious puberty are now usually managed medically by paediatric endocrinologists.