Vaginal bleeding in the pre-pubertal child

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Abstract

Vaginal bleeding is a rare presenting complaint in pre-pubertal girls which can cause a lot of anxiety in parents and carers. The differential diagnoses range from relatively simple conditions such as vulvovaginitis to more sinister conditions including malignant vulval tumours or child sex abuse. A detailed clinical review is required in making a diagnosis and planning treatment. This review article will provide an overview of the most likely differential diagnosis and suggests an approach to assessment and management for the general paediatrician.

Keywords children; puberty; vaginal bleeding

Background

The onset of puberty is characterised by activation of the hypothalamo–pituitary–gonadal axis. The hypothalamus secretes high-amplitude pulses of gonadotropin-releasing hormone (GnRH) which stimulates the pituitary gland to secrete increased levels of luteinising hormone (LH) and follicular stimulating hormones (FSH). LH stimulates the ovarian granulosa cells to produce oestrogen. Normal pubertal development in girls starts with breast development followed by pubic hair development. Menarche usually occurs approximately 2–3 years after the onset of breast development (typically around Tanner stage 4 breast development). The average age of menarche in the United Kingdom is 12.8 years. Precocious puberty in girls is defined as the appearance of any signs of puberty before the age of 8 years.

This review is focused on how to approach the initial assessment of a girl who presents with vaginal bleeding with either minimal or no other signs of puberty.

The incidence of pre-pubertal vaginal bleeding is not known. A case series in one UK institution reported 52 cases in girls under 10 years over a 20-year period.

History and examination

History

The history and examination are the most crucial part in coming to a diagnosis as to the cause of pre-pubertal vaginal bleeding. Firstly, explore the nature of the bleeding: was it spotting or heavier bleeding; how many days did it last for; is there a history of previous episodes of vaginal bleeding? If yes, then ascertain the frequency.

Ask about any associated symptoms: Any vaginal discharge or foul smell suggesting foreign body; any itchiness or scratching around the genitals which may suggest vulvovaginitis or a dermatological condition; any urinary symptoms; dysuria/frequency.

Ask about any preceding history: A history of a recent sore throat or diarrhoea may be useful in cases of vulvovaginitis as self-inoculation from poor hygiene practices is a possible cause; enquire about any preceding trauma; ask about any exposure to exogenous oestrogen or ingestion of any herbal medicines or topical creams containing oestrogens.

Ask specific questions about the child's past medical history: Elicit from the history if the child has any other signs of puberty; a history of previous fractures may be useful in cases of McCune Albright syndrome due to associated polyostotic fibrous dysplasia.

The possibility of child sex abuse is something all healthcare professionals are anxious about when presented with vaginal bleeding in the pre-pubertal girl. Often the parent or carer presenting the child will be worried about this too and it may represent 'the elephant in the room' unless specifically discussed. In the history, it is important to discuss the salient history in detail. Ask about unusual behaviour, changing history, being left with another adult or previous social care concern.

Examination

A thorough examination needs to take place to look for any local or systemic cause of the bleeding.

Start with a general examination, including assessment of growth (measure height and weight and plot on an appropriate growth chart). Look for signs of chronic illness including anaemia, jaundice, hepatomegaly, ecchymoses, and other stigmata of liver disease which may indicate hepatic dysfunction and associated coagulopathy as a cause for vaginal bleeding. Examine for signs of hypothyroidism including the presence of a goitre. The examination should also include assessment for any signs of puberty, any unusual birthmarks including the presence of café au lait marks and haemangiomas.

Examination of the external genitalia may be difficult in the peri-pubescent girl as they may be anxious and not allow full exposure. Examination should take place with parental consent (and where appropriate child consent and a chaperone). Whenever possible it should be undertaken with an experienced paediatrician present to reduce the need for repeated examinations. If child sex abuse is suspected, then the examination should only be carried out by those with expertise in forensic examination techniques.

Girls are usually examined in the supine, frog-legged position, with the upper half of the child covered. Ensure there is adequate lighting. The underwear should be examined for blood, the external genitalia for dried or fresh blood. On inspection, look for erythema, bruises, abrasions, itching or scratch marks, burns or lacerations of the external genitalia. Document the presence of any rashes, pigmentation changes, warts or vesicles. If vaginal discharge is present, send a swab for microscopy culture and

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sensitivity, document the colour and if it has a foul smell. If a mass is present, clarify if the mass is arising from the vaginal orifice or not. A urethral prolapse would present as a circular eversion of the mucosa at the end of the urethral orifice. It is separate from the vaginal opening. Comment on the hymen.

Investigations

Examination under anaesthesia (EUA) with vaginoscopy is indicated if following the history and examination the cause of the vaginal bleeding remains unexplained or following conservative measures the vaginal discharge/bleeding is persistent or recurrent. If tumours are large, they can be seen on the outside, but often they arise as small lesions high up in the vagina. EUA with vaginoscopy can help confirm the diagnosis of causes such as foreign body, sexual abuse, vaginal tumours and urethral prolapse. It is also useful in clarifying the extent of any trauma.

Further investigations will depend on clinical findings. Investigations may include non-invasive imaging (ultrasound, CT, MRI), for the diagnoses of foreign body, malignancy, benign cysts and tumours, as well as any evidence of pubertal changes in the uterus and ovaries. Other investigations that may be undertaken as routine include a swab of the discharge for microscopy, culture and sensitivity and a full blood count and clotting screen to exclude a clotting disorder. Hormonal assays including Thyroid function test, basal Luteinising hormone (LH) and Follicular stimulating hormone (FSH), Oestradiol levels and prolactin levels may be indicated if precocious puberty is suspected. The levels of LH and FSH following a GnRH (gonadotropin-releasing hormone) stimulation test helps to differentiate between Central Precocious Puberty (via the hypothalamic −pituitary−gonadal axis) and other causes of precocious puberty. The levels LH and FSH increase in central precocious puberty while they are low and do not increase in peripheral or gonadotrophic independent precocious puberty.

Aetiology

The causes of vaginal bleeding in a pre-pubertal girl can be categorised into two groups depending on the source of the bleeding:

- Bleeding from a local vaginal or vulval lesion
- Bleeding from the endometrium itself (See Table 1)

Local causes

Vulvovaginitis

Vulvovaginitis is one of the commonest reasons for pre-pubertal bleeding. The girl will commonly present with a history of vulval itching. The excessive scratching can cause excoriation of the vulval and perineal areas leading to bleeding or spotting in the underpants. Prepubertal girls are susceptible to vulvovaginitis because the vulvar tissue is hypo-estrogenic making it thin. This results in increased susceptibility to irritation and infection. In the majority of the cases, there is nonspecific vulva irritation which is non-infectious. A third of cases of vulvovaginitis are caused by infections. Common pathogens include *Streptococcal pyogenes, Haemophilus influenza* and *Enterobius vermicularis*. The proximity of the anal region to the vulva means that poor perineal hygiene with wiping from back to front increases the risk of spreading faeces and enteric pathogens into the vagina. Germs can also spread from the upper airways through autoinoculation. In some cases, a history of upper respiratory tract infection or pharyngitis may be elicited. Group A Streptococcal infection can produce a purulent blood tinged discharge and a fiery red appearance of the perineal skin with sharp demarcations. History of night time itching raises the possibility of pinworms. *Shigella* vulvitis has been described and can lead to vaginal discharge that is bloody in about half of the cases. Only about one-third of patients have a history of recent or concurrent diarrhoea.

Management of children with nonspecific vulvovaginitis includes educating the mother and child in basic rules of perineal hygiene. This includes advice to avoid potential irritants (including perfumed soaps, bubble baths, shower gels and genital deodorants), wiping the genital area from front to back after using the toilet, good hand hygiene and choosing cotton underpants washed with unscented detergents. Young girls should also be advised to void with the legs well open. The use of emollients or barrier creams can lead to some relief. If discharge is present this should be swabbed and appropriate antibiotics given, and if pinworm infection is suspected, empirical treatment with mebendazole is recommended.

Skin conditions

Local skin conditions associated with pruritus can present with vulval bleeding due to increased scratching. This includes common conditions e.g. atopic dermatitis, thrush and lichen sclerosis.

Lichen sclerosis: lichen sclerosis (LS) is a chronic inflammatory skin condition affecting the anogenital region which can affect any age and any sex. The disease occurs mainly in pre-pubertal and postmenopausal patients. Children may complain of intense pruritus. The scratching or rubbing tends to tear the thin, vulnerable skin and causes bleeding. Typical examination findings include well demarcated white plaques surrounding the vagina and/or the anus sometimes with additional hyperkeratosis, atrophic and haemorrhagic lesions. The overall aim of treatment includes the relief of symptoms and resolution of the vulval atrophy and scarring. Treatment usually involves the use of topical high potency steroids and/or topical immune modulators. Dermatologists are often involved in the management of LS.

Foreign body

Foreign body inserted into the vagina can present with spotting, bleeding, or blood-tinged discharge. In some patients, the discharge can be greenish and foul-smelling especially if the diagnosis has been delayed. One of the most common foreign body in the vaginal canal is toilet paper. A high of index of suspicion is important in any child presenting with recurrent unexplained episodes vaginal discharge/bleeding as children may not always give an accurate history. Following full history