Original Study

Vaginal Bleeding in Prepubertal Girls: Etiology and Clinical Management

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A B S T R A C T

Study Objective: We aimed to investigate the etiology and clinical management of vaginal bleeding in girls aged 0-9 years and to compare our results with previous publications.
Design, Setting, Participants, Interventions, and Main Outcome Measures: The records of all girls younger than 10 years of age who were seen between 2001 and 2011 at Skåne University Hospital Lund for vaginal bleeding were retrospectively collected.
Results: We identified 86 girls with vaginal bleeding. Of those, 47 (54.7%) were diagnosed with a local lesion, the etiology was hormonal in 16 (18.6%), and in 23 (26.7%) the etiology was unclear. Trauma was the most frequent cause of local lesions and hormonal withdrawal of the newborn was the most common hormonal etiology. Two girls were diagnosed with a tumor, 1 with relapse of a vaginal rhabdomyosarcoma, and the other with recurrence of an ovarian granulosa cell tumor. There were large disparities in the clinical management of vaginal bleeding. A genital examination was conducted in 70 of 86 (81.4%), and colposcopy in only 8 of 86 of the patients (9.3%).
Conclusion: This study confirmed vaginal bleeding as a rare finding in girls younger than 10 years of age. It is usually a benign symptom, but because there might be a serious underlying condition, proper investigation and follow-up are needed. Clinical management varied in our patient cohort. This might be because of insufficient knowledge and might indicate the need for general guidelines.
Key Words: Prepubertal vaginal bleeding, Young girls, Genital examination, Colposcopy, General anesthesia

Introduction

Vaginal bleeding in young girls is an alarming symptom and must be carefully investigated. The etiology of vaginal bleeding in young girls varies widely from idiopathic bleeding to sexual abuse and malignant tumors.[1,2] Patient history as well as additional findings and symptoms provide clues regarding different diagnostic considerations and require different types of management. However, a genital examination, which can be used to diagnose most pediatric gynecological problems, is recommended in all cases.[3–5] Opinions differ as to when the examination should be done under general anesthesia together with a colposcopy, but the predominant view is that this examination should be done if the cause of the vaginal bleeding is suspected to be trauma and the localization or extent of the injury cannot be determined in the awake child. Other indications for colposcopy is to rule out a malignant tumor, to search for a foreign body, and also when there is no apparent explanation for the bleeding.[3,5–9]

The external genitalia of children are not well protected and trauma is not uncommon.[3] Genital injuries are mostly minor and accidental but it is necessary to exclude physical and sexual abuse. Vaginal bleeding has been reported in 11% of sexually abused girls.[10]

The most common symptom with vaginal tumors is bleeding or blood-tinged discharge, and although genital tumors are very rare in childhood it is important that they are ruled out when a girl presents with unexplained vaginal bleeding. Rapid diagnosis is essential because the tumor might otherwise have a dismal prognosis.[11] Other causes of vaginal bleeding in prepubertal girls might be vulvovaginitis or urethral prolapse. When there is no lesion to be found, hormonal etiology, when bleeding arises from endometrial shedding, should be considered.[3] The hormonal source could be endogenous (eg, hormone-producing tumors or precocious puberty), or exogenous, from the maternal placenta in the neonatal period or from ingestion of hormone-containing medication. In addition to the causes mentioned, there is an abundance of unusual reasons for vaginal bleeding in children. It is common that despite thorough examination no cause is found.[12]

Alarming as it might be, little research has been done on vaginal bleeding in young girls. Only 4 studies[7,8,13,14] on the etiology of vaginal bleeding in girls aged 0-10 years have been found that had more than 5 patients (Table 1). The aim of this study was to investigate the causes of vaginal bleeding in girls younger than 10 years of age and to explore

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Table 1
Studies on Vaginal Bleeding in Girls: Etiology

Variable	Heller et al[13]	Hill et al[8]	Imai et al[14]	Aribarg et al[7]	Present Study (2013)
N	51	52	62	55	86
Age	Younger than 10 years	0-10 Years	0-10 Years	Younger than 10 years	Younger than 10 years
Etiology, n (%)					
Trauma	4 (7.8)	4 (7.7)	6 (9.7)	17 (30.9)	39 (45.3)
Genital/vaginal tumor	6 (11.8)	11 (21.2)	2 (3.2)	1 (1.8)	1 (1.2)
Foreign body			3 (4.8)	2 (3.6)	
Urethral prolapse		5 (9.6)	6 (9.7)	1 (1.8)	
Sexual abuse				5 (9.1)	
Lichen sclerosis		2 (3.8)			1 (1.2)
Hormonal withdrawal				7 (12.7)	9 (10.5)
Precocious puberty	29 (56.9)	2 (3.8)		7 (12.7)	6 (7.0)
Precocious puberty; ovarian tumor		3 (5.8)	4 (6.5)	1 (1.8)	1 (1.2)
Ovarian cyst			2 (3.2)	1 (1.8)	
Precocious menstruation*	8 (15.7)	6 (11.5)	3 (4.8)		
Vulvovaginitis	3 (5.9)	3 (5.8)	28 (45.2)	1 (1.8)	5 (5.8)
Leech				10 (18.2)	
Other specified	1 (2.0)	3 (5.8)	1 (1.6)	2 (3.6)	1 (1.2)
Unknown		13 (25.0)	7 (11.3)		23 (26.7)

* With no other pubertal signs.

clinical management with a focus on the genital examination and colposcopy.

Materials and Methods

Population

Skåne University Hospital Lund has a primary uptake area comprising approximately 260,000 inhabitants. It also serves as the catchment area for the southern part of Sweden, with a population of 1,750,000, for children referred for highly specialized services including pediatric surgery and pediatric oncology. All girls aged 0-9 years of age who presented with vaginal bleeding at a visit to the Children's Hospital at Skåne University Hospital Lund during the period 2001-2011 were identified through the diagnosis registry using the International Classification of Diseases coding system. The chosen age was younger than the more common age of menarche to exclude those with an “average onset of puberty” and menstrual bleeding. Because the specific diagnosis codes for uterine and vaginal bleeding were used infrequently, other possible codes that included the different etiologies of vaginal bleeding were also considered. In addition, a letter was sent to all physicians currently working at the Children's Hospital, in which they were asked what codes they used for vaginal bleeding in children. A total of 55 International Classification of Diseases codes were used and they are listed in Table 2. Z diagnoses—unclear diagnoses without specification were excluded together with hemangiomas because they were too general. A total of 457 girls were identified with 1 or more of the selected diagnostic codes.

Data Collection

The computerized medical records of the 457 girls were searched for the keywords: blood, bleeding, menstruation, and menarche. The search included all words consisting of 4 or more connected letters (eg, blood would include bloody as well). Eighty-six of the girls had been evaluated because of a vaginal bleeding. Their records were reviewed for age, bleeding amount, bleeding duration, clinical assessment, investigations, and possible etiology.

The study was approved by the Regional Ethics Committee, Medical Faculty, Lund University, Sweden (2014/108).

Results

Etiology

Eighty-six girls between 5 days and 9 years of age, with a median age of 4.4 years, were identified to have had vaginal bleeding. Of those, 47 of 86 (54.7%) were diagnosed with a local lesion, 16 of 86 (18.6%) had bleeding with a hormonal etiology, and for 23 of 86 (26.7%) the etiology remained unclear (Table 3).

Among the 47 girls with a local lesion, most (n = 39) suffered from trauma. In all but 1 girl, when the child had been pushed by another child, the trauma was nonintentional, self-inflicted trauma caused by an accident. Vulvovaginitis was included in the group of genital lesions and accounted for 5 cases of bleeding in this group. Four were believed to have a bacterial cause and 1 a fungal cause. There was 1 case of lichen sclerosus and 1 with a benign vulvar papilloma. One girl was diagnosed with a recurrence of rhabdomyosarcoma.

In the 16 girls with hormonal etiology, central precocious puberty was noted in 6 of them. Three were idiopathic, 1 suffered from severe epilepsy after Rasmus encephalitis, and 1 had a corpus pineale cyst. One girl with breast development and vaginal bleeding was diagnosed with hypothyroidism with a high thyroid stimulating hormone level. When she was treated with thyroxine and her thyroid stimulating hormone had normalized her estrogen returned to prepubertal levels. Hormonal withdrawal bleeding during the neonatal period was noted in 9 girls. All but 1 of the patients were younger than 10 days of age, and the remaining infant was 17 days of age. One girl was diagnosed with a relapse of an estrogen-secreting granulosa cell tumor of the ovary.

In 23 girls the etiology of their genital bleeding was unknown. The most common theory regarding the origin