Abnormal (Dysfunctional) Uterine Bleeding in Adolescents — Symptoms and Treatment

Dysfunctional uterine bleeding is very common in adolescents because of the high frequency of anovulatory cycles in this age group. The diagnosis of dysfunctional uterine bleeding is based on the exclusion of all the other causes of abnormal uterine bleeding in an adolescent. Mild dysfunctional uterine bleeding usually does not need any form of medical treatment. Moderate dysfunctional uterine bleeding should be treated with oral contraceptive pills and patients with severe dysfunctional uterine bleeding who are hemodynamically unstable should be admitted for inpatient care.

Overview

Abnormal uterine bleeding in an adolescent can be defined as any form of bleeding that is abnormal in amount, duration or frequency. When the problem is excessive uterine bleeding “> 80 mL”, the term menorrhagia is used. Heavy bleeding at irregular times is called metrorrhagia. Adolescents who have heavy and excessive irregular uterine bleeding are diagnosed with menometrorrhagia.

A specific form of abnormal uterine bleeding in the adolescent is known as dysfunctional uterine bleeding. Dysfunctional uterine bleeding is the excessive and prolonged uterine bleeding from the endometrium that is of an unknown cause. The term anovulatory bleeding is interchangeably used in place of dysfunctional uterine bleeding.
Epidemiology of Dysfunctional Uterine Bleeding in Adolescents

Dysfunctional uterine bleeding is the most common cause of abnormal uterine bleeding in adults and is diagnosed in up to 95% of the cases.

The estimated incidence of menorrhagia is 25%, metrorrhagia is 29%, and other forms of abnormal uterine bleeding are relatively rare in adolescents. In another study, the estimated prevalence of menorrhagia in a cohort of school-aged girls with an average age of 16 years was 38%.

One of the most important risk factors for abnormal uterine bleeding in adolescents is age. Younger females are more likely to have anovulatory cycles, which present with dysfunctional uterine bleeding. Another important risk factor for abnormal uterine bleeding in adolescents is a family history of menorrhagia or heavy menstrual bleeding.

The term "dysfunctional uterine bleeding" should be reserved for girls who do not have any underlying cause for the excessive bleeding except for physiologic anovulation. Therefore, adolescents with excessive uterine bleeding due to inherited coagulation defects, endocrinopathies, or other causes are not covered in this topic.

Pathophysiology of Dysfunctional Uterine Bleeding in Adolescents

To understand why anovulatory cycles might cause dysfunctional uterine bleeding in an adolescent, it is important to understand the normal physiologic changes that occur during ovulatory cycles first.
Menarche typically starts at the age of 12.8 years in girls in the United States. The menstrual cycle, which is typical of 28 days’ duration, is usually divided into three phases.

The first phase, known as the proliferative phase, is characterized by the production of gonadotropin-releasing hormone (GnRH) from the hypothalamus which stimulates the pituitary gland to secrete follicle-stimulating hormone (FSH) and luteinizing hormone (LH). FSH stimulates the proliferation of ovarian follicles.

Eventually, a dominant follicle is selected and this follicle starts producing estradiol. Estradiol is responsible for the proliferation of the endometrium, the formation of spiral arteries, and the production of progesterone receptors on the endometrium. Once the levels of estradiol reach a certain threshold, a surge of LH is released from the pituitary.

This step marks the start of the ovulatory phase where the dominant ovarian follicle is stimulated to undergo ovulation. Once ovulation happens, the ovulated ovarian
follicle becomes the corpus luteum. The corpus luteum produces estrogen and progesterone. The production of progesterone in the ovulatory cycle is very important as it is responsible for halting endometrial growth and the stabilization of the proliferation of the endometrial spiral arteries.

If fertilization does not occur, the corpus luteum undergoes involution and the release of progesterone and estrogen ceases. If this happens, then the endometrium collapses and is shed as menstrual flow.

The main difference between ovulatory and anovulatory cycles is the absence of the production of progesterone. When progesterone is not released, the effects of estradiol on endometrial growth and proliferation are not opposed. Therefore, excessive proliferation of spiral arteries is a hallmark in the pathogenesis of dysfunctional uterine bleeding in adolescents.

Clinical Presentation of Dysfunctional Uterine Bleeding in Adolescents

Before establishing the cause of abnormal uterine bleeding in an adolescent, it is important to ensure the hemodynamic stability of the patient. You should look for signs of excessive blood loss such as pallor, tachypnea, tachycardia, delayed capillary refill time and hypotension. Hypotension is a late sign of excessive blood loss.

Adolescents who present with abnormal uterine bleeding most likely have dysfunctional uterine bleeding due to an ovulation, however, this is a diagnosis of exclusion. History taking and physical examination of the adolescent aim to define possible secondary causes of abnormal uterine bleeding.

The most common pathologic cause of abnormal uterine bleeding in an adolescent is a coagulation disorder. The previous history of easy bruising, prolonged bleeding time, hemarthrosis, and family history of bleeding disorders point towards pathologic abnormal uterine bleeding rather than dysfunctional uterine bleeding.

The possibility of an ectopic pregnancy or a miscarriage should be always addressed in sexually active adolescents. Trauma to the external or internal gynecological organs can also cause vaginal bleeding.
Thyroid disorders especially hypothyroidism can cause excessive uterine bleeding. Unexplained weight gain, cold intolerance, and recent history of thyroiditis point towards the possibility of hypothyroidism.

For the adequate diagnosis of menstrual disorders in adolescents, a detailed menstrual history should be taken. The age at menarche, the frequency, amount, and duration of menses, and history of dysmenorrhea should be all addressed. The age at menarche is very important because ovulatory cycles usually become regular and stable after 2 years of menarche.

Vaginal and spatula examination should be reserved for sexually active adolescents. Virginian adolescents who present with dysfunctional uterine bleeding and dysmenorrhea should undergo a digital rectal examination to exclude endometriosis in the cul-de-sac.

### Diagnostic Workup for Dysfunctional Uterine Bleeding in Adolescents

A complete blood count is indicated to determine the concentrations of red blood cells and hemoglobin. Thrombocytopenia should be also excluded from a complete blood count as it can cause excessive uterine bleeding.

Thyroid stimulating hormone levels should be determined as a screening for thyroid dysfunction. Adolescents with primary hypothyroidism usually have elevated thyroid stimulating hormone levels, whereas, those with secondary hypothyroidism have low levels of thyroid stimulating hormone.

Sexually active adolescents should undergo a serum or urine pregnancy test to exclude pregnancy. Coagulation profile testing should include prothrombin time, partial thromboplastin time and bleeding time. The coagulation profile should be checked especially in girls with excessive acute uterine bleeding and a hemoglobin level below 10 g/dL at presentation. If a bleeding disorder is suspected, von Willebrand factor antigen should be tested.

If the diagnostic workup fails to identify a cause of the abnormal uterine bleeding, then
the diagnosis of dysfunctional uterine bleeding is established.

Treatment of Dysfunctional Uterine Bleeding in Adolescents

The treatment of dysfunctional uterine bleeding in adolescents is dependent on the severity of blood loss and the expectations of the adolescent. Some adolescents seek medical attention for a prescription for birth control rather than their irregular periods and this should be addressed as early as possible during the visit to the clinic.

Adolescents with mild dysfunctional uterine bleeding and a normal hemoglobin level should receive reassurance and education. It should be explained to the adolescent that within a couple of years, ovulatory cycles will become the norm and dysfunctional uterine bleeding will cease.

Adolescents with normal hemoglobin levels but excessive dysfunctional uterine bleeding that interferes with daily activities should receive some form of treatment. Oral contraceptive pills are the treatment of choice for dysfunctional uterine bleeding in adolescents but they might be not appropriate for some adolescents due to parents’ concerns. In that case, ibuprofen should be used instead. Ibuprofen does not affect the irregularity of the anovulatory cycles but it can decrease the amount of blood loss and the cramping pain.

Adolescents with a hemoglobin level < 10 g/dL but no active bleeding should receive oral contraceptive pills plus ibuprofen. Iron supplementation is also recommended in this group. Typically, oral contraceptive pills are used for one to two years until the gynecological age of 2 years. The gynecological age is calculated by subtracting the age at menarche from the current age. At that point, if contraceptive is still needed, then oral contraceptive pills can be continued.

Patients with excessive ongoing dysfunctional uterine bleeding and a hemoglobin level < 10 g/dL should be carefully examined to confirm hemodynamic stability. Hemodynamically stable patients should receive high-dose estrogen cascade therapy for two to three days. High-dose estrogen will usually stop the bleeding or significantly decrease the bleeding.

Patients who do not tolerate high dosage estrogen or who do not show respond within two to three days should be evaluated again by a specialist. At this high dose, estrogen can cause nausea and vomiting. Therefore, anti-nausea medications are indicated. If
the patient shows a good response after three days of cascade therapy, they should be started on regular dose oral contraceptive pills.

Finally, patients with acute hemorrhage that are hemodynamically unstable should be admitted to the hospital for inpatient care. Blood transfusions might be needed. Intravenous estrogen is used in most cases.

References


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