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Features of Juvenile Uterine Bleeding in Adolescence

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Abstract: The article presents literature data from domestic and foreign authors regarding terminology, prevalence, pathogenesis and risk factors for dysfunctional uterine bleeding during puberty. According to modern views, the basis of pathogenesis is a dysfunction of the regulatory centers of the brain: the hypothalamic-pituitary system, which is a reflection of the age-related characteristics of the teenage body - the physiological immaturity of the regulatory centers and their unstable connections with the ovaries. Particular significance is attached to the defect of negative feedback of the ovaries and the hypothalamic-pituitary region of the central nervous system. Despite the increase in estrogen levels, the secretion of follicle-stimulating hormone continues without decreasing, which stimulates the growth of the follicle pool. Maintaining the secretion of follicle-stimulating hormone at a higher level than necessary inhibits the release and development of the dominant follicle from among them, and, therefore, excludes the process of ovulation with the further formation of the corpus luteum and the production of progesterone, which determines the normal rejection of the endometrium.

Keywords: teenage girls, dysfunctional uterine bleeding during puberty, causes, risk factors.

In the last two decades, against the backdrop of deteriorating socio-economic living conditions for the majority of the population of Uzbekistan, worsening environmental conditions, and complications of the demographic situation, scientists have drawn attention to a persistent negative trend in the health of adolescents. Teenagers 15-17 years old belong to the age group that in the next decade will determine not only the economic potential of the state, but the reproduction of the population and the health of future generations. In fact, the health of the younger generation is the most important element of the country's national wealth. In this regard, the medical and social significance of the problem of protecting the reproductive health of the population, prevention and treatment of gynecological diseases, starting from puberty, has sharply increased.

In adolescence, the neuroendocrine system is especially vulnerable, since during this period its functional activity develops [5, 7]. Many domestic and foreign authors note the increasing frequency of menstrual irregularities - the main guarantor of the viability of female reproductive function [6]. V.V. Bodrova points out that according to preventive examinations in 2012 in Uzbekistan, the gynecological morbidity of teenage girls was 114‰, while among gynecological diseases the most common are inflammatory diseases of the genital organs and deviations in the formation of the reproductive system. The incidence of menstrual irregularities in adolescent girls aged 15-18 years increased by 3.4 times in 1992-2002 [3]. According to V.S. Orlova et al. for the period 1999–2008 the frequency of functional disorders of the menstrual cycle among girls 15–17 years old increased by 2.2 times, among adolescents 10–14 years old – by 5.3 times [15].

One of the most important and clinically manifest forms of menstrual dysfunction is uterine bleeding during puberty, previously known in our country as juvenile bleeding. The more familiar term has

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recently been changed in accordance with the recommendations of the International Classification of Diseases, Xth Revision. Due to the variety of conditions and causes for the occurrence of uterine bleeding, the term “abnormal uterine bleeding” is more often used in foreign literature to designate it.

Regardless of the terminology, in each case we mean pathological bleeding caused by a violation of endometrial rejection in girls during the period of life from menarche to 18 years, which occurs with a frequency of more than 1 time in 21 days, lasts more than 7 days or is accompanied by a blood loss of more than 80 ml. These uterine bleedings are dysfunctional in nature and are caused by instability of hormonal homeostasis. However, in order to make a diagnosis, it is initially necessary to prove the absence of organic diseases of the genital area (benign and malignant tumors, endometrial polyps, interrupted pregnancy) or systemic diseases of the body (blood diseases, liver diseases, severe hypertension), which can also be accompanied by uterine bleeding. This principle, both in our country and abroad, is fundamental, therefore dysfunctional uterine bleeding is a “diagnosis of exclusion” [9].

Thanks to experimental and clinical studies in the second half of the last century, the pathogenesis of uterine bleeding has now been studied in sufficient detail. According to modern views, its basis in the puberty period is a dysfunction of the regulatory centers of the brain - the hypothalamic-pituitary system, which is a reflection of the age-related characteristics of the teenage body - the physiological immaturity of the regulatory centers and their unstable connections with the ovaries. Particular significance is attached to the defect of negative feedback of the ovaries and the hypothalamic-pituitary region of the central nervous system. Despite the increase in estrogen levels, the secretion of follicle-stimulating hormone continues without decreasing, which stimulates the growth of the follicle pool. Maintaining the secretion of follicle-stimulating hormone at a higher level than necessary inhibits the release and development of the dominant follicle from among them, and, therefore, excludes the process of ovulation with the further formation of the corpus luteum and the production of progesterone, which determines the normal rejection of the endometrium. The process of ovulation formation develops gradually and even 5 years after menarche, no more than 80% of girls have an ovulatory cycle [9, 10,].

The functional state of higher nervous activity, which controls the regulatory mechanisms of the reproductive system, is unstable during puberty; the production of differentiations in the cerebral cortex and, especially, the hypothalamic-pituitary centers is insufficient. The uterus has not yet completed its final development, its receptors are imperfect, and the potential for the uterus to perceive irritations and conduct them into the central nervous system is poorly expressed. In this case, the pituitary gland receives perverted impulses and the synthesis of gonadotropic hormones is not coordinated in it; the production of follitropin prevails, and lutropin and prolactin are not produced sufficiently. Various external and internal stimuli operating against this background can easily disrupt the regulatory mechanisms of the reproductive system, preventing the establishment of its stereotype and being accompanied by uterine bleeding.

The hormonal function of the ovaries during this period in girls is not sufficiently expressed due to the imperfection of the receptor apparatus, as a result of which follicles and steroidogenesis are disrupted, and bleeding is most often hypoestrogenic in nature. Long-term monotonous exposure to low levels of estrogen causes necrobiotic processes in the endometrium, which is accompanied by bleeding. Taking into account that the bleeding mechanism is not associated with a sharp drop in hormones, as happens during normal menstruation, therefore, the endometrium is not shed simultaneously, but in separate areas, so bleeding is often light. Since the level of estradiol is not high enough for rapid regeneration of the endometrium, bleeding is prolonged. Along with this, the question of the role of the endometrium itself in the occurrence of bleeding is discussed. It is assumed that endocrine, hemostasiological, as well as immunological mechanisms are important in the development of bleeding at the endometrial level.

Much less often (mainly in girls with high nutrition) in adolescence, a hyperestrogenic type of bleeding occurs, which is more typical for the menopause. Scientific research into this problem, carried out in recent years under the leadership of E.V. Uvarova (2005, 2007), the existence of a normoestrogenic type of dysfunctional uterine bleeding has been proven, which, according to the authors, occurs in

37.5% of cases, hypoestrogenic type - in 41.3%, hyperestrogenic type - in 21.2% of cases. When determining the type of bleeding, the authors took into account several criteria: the level of estradiol, which determines the degree of puberty, cortisol, the main stress hormone, the nature and consistency of the patient's physical and sexual development, the size of the uterus and the condition of the endometrium, as well as psychological status.

It has been established that the hypoestrogenic type of uterine bleeding is characterized by a decrease in the concentration of estradiol in the blood below age-specific normative values, disharmonious development, a small uterus with a thin endometrium, and an increased level of cortisol in the blood plasma, which gives the authors reason to assume that patients are constantly prepared for stress reactions. Patients with a normoestrogenic type of bleeding are characterized by harmonious development, smaller uterine sizes compared to the age norm with normal estradiol content, and increased cortisol levels, indicating a high probability of emotional-stressful origin of normoestrogenic uterine bleeding.

In the case of the hyperestrogenic type of bleeding, the level of estradiol exceeded one and a half times the age norm; these patients are distinguished by physical acceleration and disharmonious acceleration of the development of effector organs and tissues of the reproductive system. The authors believe that this type of uterine bleeding is due to a delay in the formation of full interaction between the interested parts of the central nervous system. The normal level of cortisol concentration led them to doubt the significance of psychological distress in the origin of this type of bleeding.

However, one cannot but agree with the opinion of R.A. Saidova (2007) is that such a division of bleeding into hypo-, normo- and hyperestrogenic in terms of the level of estrogen at the time of bleeding is very arbitrary, since it usually unfolds against the background of a decline in hormones. It is important to take into account the level of estrogen preceding bleeding, assessing the size of the endometrium, the volume of the ovaries, and the condition of the follicular apparatus in the ovaries using ultrasound scanning data.

A unified classification of uterine bleeding during puberty, accepted internationally, has not yet been developed. In everyday practice, when determining the type of uterine bleeding, the doctor is usually guided by the features of the clinical picture - polymenorrhea, metrorrhagia and menometrorrhagia.

The expressed interest in the problem of uterine bleeding during puberty on the part of scientists is due to its fairly high prevalence: from 20% to 30-48% in the structure of gynecological morbidity among teenage girls. It is difficult to establish the true frequency of uterine bleeding, since this nosological form is not taken into account by official statistical reporting at the state level. Therefore, all statistics regarding this pathology are based only on clinical samples, which explains such a wide range of indicators that are determined with a similar approach by the scale of a particular clinical institution. In addition, as practical observations show, often the appeal of parents or the patient herself to specialists in such situations is ignored. The social significance of this pathology is determined by the fact that bleeding causes temporary or permanent disability and negatively affects their future reproductive ability.

Thus, the immaturity of the central mechanisms that regulate the formation of menstrual function during puberty is currently the determining cause of dysfunctional uterine bleeding at this age. The situation is aggravated by numerous unfavorable factors, including social ones, acting repeatedly or chronically, or acutely, but having a great impact, preceding the appearance of bleeding, especially in cases of a genetic predisposition to abnormal functioning of the reproductive system.

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