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**LEPTIN AND PECULIARITIES OF PUBERTYGENESIS IN ADOLESCENT GIRLS WITH GYNECOLOGICAL PATHOLOGY, BORN LOW OR HIGH TO GESTATIONAL WEIGHT**

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**ЛЕПТИН И ОСОБЕННОСТИ ПУБЕРТАТОГЕНЕЗА У ДЕВУШЕК-ПОДРОСТКОВ С ГИНЕКОЛОГИЧЕСКОЙ ПАТОЛОГИЕЙ, РОДИВШИХСЯ С НИЗКОЙ И ЧРЕЗМЕРНОЙ МАССОЙ ТЕЛА**


**Summary.** The article outlines the problems of the influence of leptin on the formation of menstrual function in adolescent girls born with low and excessive body weight. The risk factors that are triggers in the formation of
gynecological pathology have been identified and indicated. The deviation of body weight in girls at birth is one of the triggers of the pathological course of pubertogenesis, the course of which is accompanied by a clear relationship between the production of leptin (L) and body mass index (BMI), is manifested by impaired physical development, menstrual function and is most often combined with pathological changes in the functioning of the autonomic nervous system, which must be taken into account when verifying diagnosis and treatment of such patients.

Резюме. В статье изложены проблемы влияния лептина на формирование менструальной функции у девочек-подростков, рожденных с низкой и избыточной массой тела. Выявлены и указаны факторы риска, являющиеся триггерами в формировании гинекологической патологии. Отклонение массы тела у девочек при рождении является одним из пусковых механизмов патологического течения пубертатогенеза, который сопровождается четкой взаимосвязью между продукцией лептина (L) и индекса массы тела (IMT), проявляется нарушением физического развития, менструальной функции и чаще всего сочетается с патологическими изменениями функции вегетативной нервной системы, что необходимо учитывать при верификации диагноза и лечении таких больных.

Keywords. puberty, leptin, small gestational weight, macrosomia

Ключевые слова. пубертат, лептин, малая масса плода, макросомия

Introduction. In recent decades, the demographic situation in Ukraine has been deteriorating. After gaining independence, the influence of negative factors increases, namely the birth rate decreases, the population ages, and the health of Ukrainians deteriorates.

There is instability of economic indicators, and more people are constantly migrating from the country. The combination of such indicators leads to a negative trend, namely in Ukraine now the population is about 10 million less than it was in the early 90's.

At the heart of the priority areas of policy and national security should be the improvement of factors to improve the development of the country's population. Markers of demographic indicators are crucial for improving the state, and the issue of optimizing the development of the population should be a priority, as a priority marker of the outcome of the state.

The size of the national budget is closely correlated with markers of labor potential, which in turn depends on the level of the working population, and at the same time on the factors of demographic indicators.

Data on the examination of current demographic and social factors in Ukraine show that the country is in a deep demographic crisis, which is a consequence of economic and social problems, as we...
which may play an important role in shaping the physical and sexual development of girls, causing their future reproductive potential. It is well known that one of the important indicators in assessing body weight is a hormone produced by adipose tissue - leptin (L). Adipose tissue is not only a participant in metabolism, but also an endocrine organ, it is integrally involved in the coordination of various biological functions, including energy metabolism, neuroendocrine and immune function. Leptin plays an important role in the initiation of puberty [13].

Leptin is secreted by adipocytes into the blood in varying amounts depending on the needs of the body and acts as a hormone that controls the mass of adipose tissue. The physiological role of leptin is to maintain feedback between the CNS and adipose tissue - the main energy depot in the body. Normoleptinemia is a prerequisite for a balanced activity of the reproductive system as a whole. Disorders of the reproductive system, accompanied by changes in hormonal homeostasis, can lead to violations of the rate of sexual development, starting from the prepubertal period. At the same time, studies only of luteinizing hormone, follicle-stimulating hormone, estradiol and progesterone in the early stages of puberty do not always reflect the state of reproductive function in adolescents [14].

Given that the manifest function of puberty - menstrual function(MF), appears in adolescents who have reached a certain body weight (at least 45-47 kg), we can assume that leptin is one of the markers of character assessment pubertygenesis[15].

**Aim.** To analyze the leptin level indicators in adolescent girls with pubertal disorders, depending on the body weight at birth and the nature of extragenital pathology.

We aim to find prognostic criteria for identifying risk groups to reduce the reproductive potential of young people, namely among adolescent girls born with polar body weight values.

**Material and methods.** The work was performed on the clinical base of the Department of Obstetrics, Gynecology and Pediatric Gynecology of Kharkiv National Medical University. All patients signed informed consent to participate in the study.

Inclusion criteria: voluntary informed consent of patients and their parents to conduct the study, accurate information on body weight at birth, birth at 37-41 weeks of gestation, the presence of gynecological pathology in the absence of abnormal development of the genitals. Patients born less than 37 weeks or more than 41 weeks of multiple pregnancies were excluded from the study.

69 adolescent girls aged 11-17 with gynecological disorders (dysmenorrhea syndrome, oligo- and anovulation, amenorrhea, abnormal uterine bleeding) were examined. Of these, 34 patients were born with a body weight less than 2500 g - 1 group, and 35 patients - with a body weight over 4000 g - 2 group.

To verify the diagnosis, a detailed collection of complaints and anamnesis, clinical analysis of menstrual function, ultrasound of the pelvis, assessment of sexual development, determination of levels of gonadotropic and sex hormones, and L. All girls were assessed for gynecological status through recto - abdominal and vaginal examinations depending on sexual experience.

With the help of line diagrams developed in the IODP of the Academy of Medical Sciences of Ukraine, the nature of physical development of adolescent girls was determined[16].

Body mass index (BMI) was measured, which is closely correlated with the total body fat content: BMI = weight, kg / height, m2 According to the WHO classification, BMI less than 18.5 kg / m2 corresponds to insufficient, 18.5 - 24.9 kg / m2 - normal, greater than or equal to 25.0 - overweight, more than 30.0 kg / m2 - obesity.

Sexual development was studied on the basis of the sequence of occurrence and severity of secondary sexual characteristics. The degree of sexual development of girls was assessed by the formula Ma + P + Ax + Me, which includes the following indicators: development of the mammary glands - Ma, pubic hair - P, axillary hair - Ah and MF[17].

Comprehensive clinical and laboratory research was supplemented by consultation with a neurologist with examination of the function of the central and autonomic nervous system.

**Discussion.** It was found that MF disorders were observed with the same frequency in both groups of patients and their nature did not differ significantly. At patients of 1 group disturbances on type of a syndrome of a dysmenorrhea and abnormal uterine bleedings proceeded more often against deficit, at patients of 2 groups - against excess of body weight.

In the majority of respondents (54 - 78.3%) disorders of the autonomic nervous system were detected: astheno-neurotic syndrome, autonomic dysfunction. Leptin levels were elevated in obese patients and decreased in girls with impaired physical development by type of weight loss and closely correlated with BMI.

**Conclusions.** Deviation of body weight in girls at birth is one of the triggers of the pathological course of puberty, during which there is a clear relationship between the production of L and BMI, manifested by impaired physical development, menstrual function and often combined with pathological changes in the autonomic nervous system should be taken into account when verifying the diagnosis and treatment of such patients.

The obtained results make it possible to differentiate markers of reduction of ovarian reserve of adolescent girls. This allows for optimization in the formation of risk groups. With the new results of the onset of puberty, we are able to predict and monitor changes in reproductive capacity, as well as implement preventive measures to improve the female health of adolescent girls.

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