them with the help of physical exercise and stress. Students received their data and identifying a predisposition to the development of flat feet, are beginning to realize the importance of physical training.

The great interest of the students is the study of the iris eye, because it is a reflector of congenital deficiencies set forth in the genotype. Characteristic signs iris indicating the pathological changes in the body, and relate spots gap. Their whereabouts shows the weakness of the relevant body, which is determined by a special scheme - map. This information allows you to think about your health and prevention.

In order to optimize these activities at the Department of Anatomy Amur SMA created a special handbook, in which all the parts ' Morphological passports "are described in detail, with the result that each student has the opportunity to objectively evaluate all the pros and cons of the figure and its physical development. Identified deviations of parameters of physical development may be risk factors or symptoms of certain diseases. Experience shows that morphological certification of students - it is a progressive way to learn anatomy through "interest to the body," as well as one of the important levers of influence on motivation, determining the need for further improvement of the physical and healthy lifestyles.

Concluding all the above, we believe that this kind of students research work in the department of anatomy, not only allows us to study the human body in the direction of a professional, but also is the active form of promotion of healthy lifestyles, taking into account the integration of relations with the Department of Physical Education and Health.

Literature

1. Grebova, LP Therapeutic physical training in disorders of the musculoskeletal system in children and adolescents:.Textbook / LP Grebova. - Moscow: Publishing Center "Academy", 2006. - 176 p.

2. Yankelevich, EI Posture and flat. /E.I. Yankelevich - M: Medgiz, 1956. 100 p.

3. Materials from the site http: // med - lib.ru

BODY MASS DYNAMICS IN WOMEN OF REPRODUCTIVE AGE WITH HYPOTHALAMIC DYSFUNCTION IN PUBERTY. NORMAL WEIGHT PREDICTORS

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Abstract The results of a prospective study of the dynamics of body mass in women of reproductive age with a hypothalamic dysfunction (HD) in puberty with overweight in 36 (41.9%) and obesity in 50 (58.1%) examinees are presented, an average age in reproductive age women was 21.95 ± 0.2 years. The analysis of body mass dynamics showed decreasing of body mass index (BMI) in reproductive age, relative to puberty, it occurred in 73.3% of patients, in 88.9% of women with normal body mass and in 11.1% of women with overweight; BMI has not changed in 17.4%, the increasing of BMI › 30.0 kg/m2 - in 9.3% of examinees. The relative risk (RR) of the primary infertility in women of reproductive age with HD in puberty and obesity, relative to overweight was › 1 (RR = 1.08; 95% confidence interval 0.5-2.1), the secondary infertility › 1 (RR = 1.3; 95% CI 0,5-3,4). A complex of predictors, which allows to predict a normal body mass (BMI 18-24,9 kg/m2) in reproductive age in women with HD in puberty, was determined the most valuable is the chronic tonsillitis during puberty, and the least - the threat of abortion in the mother in the first trimester of pregnancy.

Key words: hypothalamic dysfunction, obesity, predictors of normal body mass.

Introduction. According to a systematic review, the prevalence of obesity in children and teenagers in the general population all over the world is ranging from 4 to 7.6% [1, 8]. The frequency of obesity is increasing in both developed and developing countries [4, 8]. In the US, this problem has reached a national epidemic proportion, in children aged from 6 to 19 years obesity is determined in 31%, in China - 10%, in Russia - 11.8% [4, 7]. For obstetricians obesity in adolescent girls seems unfavorable background that influences the process of puberty, leading to the early onset of menarche, deviations in the order of appearance of sexual characteristics and menstrual disorders [2, 8, 9]. In reproductive age obesity is rating as one of the main causes of reproductive disorders in women, leading to a decrease of fertility. [3, 7]. It is shown that the prevalence of infertility in women of reproductive age with a BMI over 30 kg/m2 is 2.7 times higher than in women with normal body mass and reaches 33.6% [3]. Obesity in puberty increases the risk of reproductive age menstrual dysfunction in 6 times, and the primary infertility in 4 times [6]. Hypothalamic dysfunction is associated with the development of overweight in 38%, and obesity in 70% [5, 9].

The purpose of research is to assess the dynamics of body mass in women of reproductive age with HD in puberty, relative to puberty body mass, to identify predictors of a normal body mass (BMI 18-24,9 kg/m2).

Materials and methods. 86 women of reproductive age with HD in puberty were examined. The study was conducted on the base of the gynecological department of the SAI State Clinical Hospital of the Amur region

Ministry of Health, the state Perinatal Center, the gynecological department of the SAI City Clinical Hospital Ministry of Health of the Amur region from 2008 to 2014. To assess the degree of obesity the BMI was calculated by the formula (G.Brey, 1978).

The mathematical processing of the data was carried out using the «Microsoft Excel» program and the statistical software package «Statistica 6.0» in compliance with the general recommendations for medical and biological researches. Final results of the analyzed parameters of the interval scale in each sample are presented as M (SD), where M is an arithmetic average, SD – a standard deviation. Contingency tables were used to assess the risks. The impact of specific factor was assessed by the magnitude of the RR of data comparison in two groups - exposed, subjected to the influence of risk factor, and unexposed, not subjected to this factor. If the value of RR › 1 - studied factor becomes a risk factor. A multivariate analysis by the method of logistic regression, by which the probability of correlating a particular object to a particular state was estimated, was used for the construction of predictive model. The condition of the object was described by binary quality sign.

Results. The average age of women of reproductive age was 21,95 ± 0,2 years. In the studied cohort the 28 (32.6%) women of reproductive age were workers, 22 (25.6%) were students of secondary and higher educational institutions, 13 (15.1%) were employees and 23 (26.7%) were housewives.

The analysis of somatic and reproductive health in puberty was conducted in women of reproductive age with HD in puberty. The neonatal period in 35 (40.7%) women of reproductive age with HD in puberty was complicated by cerebral ischemia. The chronic tonsillitis in 52 (60.5%), a diffuse (endemic) goiter in 35 (40.7%), a retinal angiopathy in 26 (30.2%), a dystonia in 19 (22.1%), a chronic gastritis in 15 (17.4%), a chronic pyelonephritis in 10 (11.6%) were identified in the structure of somatic diseases in puberty. Herpetic infection in puberty occurred in every second patient in the study group - 47 (54, 7%).

A BMI in puberty was 30,73 ± 4,43 kg/m2. The age at which body mass jump was observed in the study group was 10,2 ± 1,34 years. In puberty overweight was diagnosed in 36 (41.9%), obesity in 50 (58.1%) of examinees.

Dynamics of body weight BMI in women of reproductive age comparatively to puberty is reflected in Figure 1.
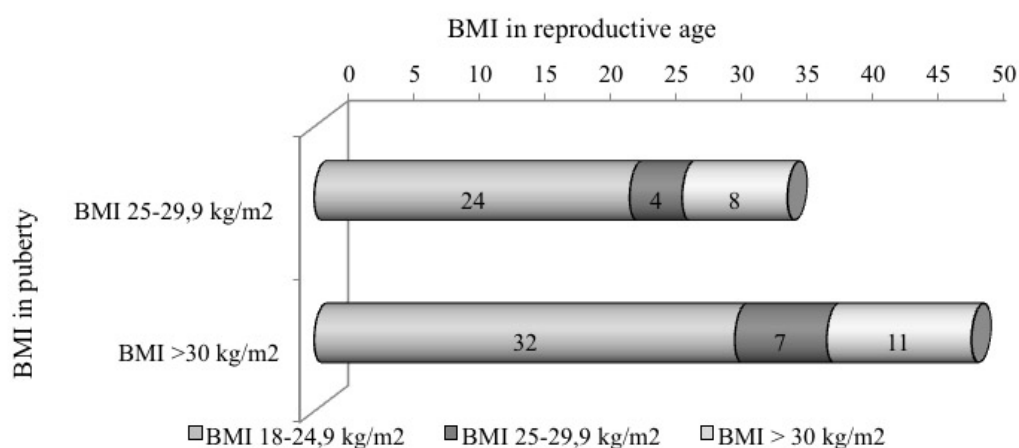

Fig. 1 BMI in women of reproductive age with HD in puberty with overweight and obesity (absolute number)

In 36 (41.9%) women with overweight in puberty in reproductive age were determined (Figure 1): normal weight (BMI 18-24,9 kg/m2) in 24 (66.7%), overweight (BMI 25-29.9 kg/m2) in 4 (11.1%) and obesity (BMI› 30.0 kg/m2) in 8 (22.2%). In 50 (58.1%) women with obesity in puberty, in reproductive age were found (Fig. 1): normal weight (BMI 18-24,9 kg/m2) in 32 (64.0%), overweight (BMI 25-29.9 kg/m2) 7 (14.0%) and obesity (BMI› 30.0 kg/m2) in 11 (22.0%).

The analysis of body mass dynamics showed that the reduction in body mass (by BMI) in the reproductive age relatively to puberty occurred in a significant number of women - 63 (73.3%), herewith in 56 of them (88.9%) to normal body weight, in 7 (11.1%) to overweight. In 15 (17.4%) women of reproductive age BMI has not changed in comparison with the puberty and complies with overweight in 4 (26.7%), obesity in 11 (73.33%). Increased BMI› 30.0 kg/m2 in reproductive age compared with puberty was observed in 8 (9.3%) examinees.

When analyzing the menstrual function the evaluation was carried out on the following parameters: age of menarche, menstrual cycle regularity, structure of menstrual disorders. The age of menarche in studied group of women was 11,6 ± 0,81 years. The 36 (41.9%) of examinees has a regular menstrual cycle (the duration of menstruation for 3-6 days - 4,68 ± 0,22 days, the interval between periods was 24-37 days - 24,4 ± 1,2 days). The menstrual cycle was not established for 1 year in 50 (58.1%) examinees. The gynecological anamnesis in puberty was complicated with oligomenorrhea (N 91.3, N 91.4) in 62 (72.1%), primary amenorrhea (N 91.0) in 19 (22.1%), secondary amenorrhea (N 91.1) in 5 (5, 8%) women. 24 (27.9%) of examinees has abnormal uterine

bleeding in puberty (N 92.2). Dysmenorrhea (N 94.4) in puberty was diagnosed in 9 (10.5%) examinees in the study group.

The following menstrual disorders in the study group were found in reproductive age: oligomenorrhea in 17 (19.8%), amenorrhea in 3 (3.5%), heavy menstrual bleeding in 16 (18.6%) women. The infertility was diagnosed in 35 (40.7%), of which the primary in 21 (60.0%), secondary - in 14 (40.0%) women of the study group.

The risk of primary and secondary infertility in women of reproductive age with HD in puberty depending on the presence of obesity in puberty according to overweight, were identified. Relative risk of primary infertility in women of reproductive age with HD and obesity in puberty was › 1 (OR = 1.08; 95% confidence interval 0.5-2.1), of secondary infertility › 1 (OR = 1.3; 95 % CI 0,5-3,4).

Taking into account the data about the risk of primary and secondary infertility in women of reproductive age with obesity and with HD in puberty, as well as a significant number of women with normal body weight - 63 (73.3%), we used logistic regression method to estimate the parameters of the regression equation.

Quality features (characterizing antenatal, neonatal, somatic and reproductive health) considered as potential predictors. Probability of classifying the individual patient to the selected gradation was calculated from logistic regression equation. It was created a model that allowed to predict a normal BMI (18,0-24,9 kg/m2), depending on the set of predictors in puberty. As a result of multivariate analysis we have got a set of informative indicators allows to correctly classify women with a normal BMI of reproductive age in 64.75%.

The expression for calculating the exponential regression equation is presented below:

$\beta = 0,11 - 0,22 \times X_1 + 0,45 \times X_2 + 0,27 \times X_3 + 0,72 \times X_4 - 0,41 \times X_5 + 0,45 \times X_6$

Where,

X_1 – the threatened miscarriage in a patient's mother in the first trimester of pregnancy (0- there was not, 1- there was)

X_2 – cerebral ischemia in the neonatal period (0- there was not, 1- there was)

X_3 – diffuse endemic goiter at puberty (0- there was not, 1- there was)

X_4 – chronic tonsillitis in puberty (0- there was not, 1- there was)

X_5 – herpes infection in puberty (0- there was not, 1- there was)

X_6 – abnormal uterine bleeding in puberty (0- there was not, 1- there was)

The probability of assigning a woman to sign gradation (in this case to a group with a BMI (18-24,9 kg/m2)) or "RRED 1" calculated by the formula: $PRED1 = (EXP(\square)/(1-EXP(\square))$. When a probability P_1 is more than 0.5, the examinee relates to the gradation, in this case - to the group with 18-24,9 BMI kg/m2.

Predictors in the model presented above are allocated in importance as follows (in increasing significance in view of standardized regression coefficients):

X_4 – chronic tonsillitis in puberty – 0,7231,

X_6 – abnormal uterine bleeding in puberty – 0,4560,

X_2 – cerebral ischemia in the neonatal period – 0,4496,

X_5 – herpes infection in puberty – 0,4091,

X_3 – diffuse endemic goiter at puberty – 0,2741,

X_1 –threatened miscarriage in a patient's mother in the first trimester of pregnancy – 0,2214.

Thus, the chronic tonsillitis is the most significance in this model of BMI, and the threatened miscarriage in a patient's mother in the first trimester of pregnancy is the least.

Discussion. As the result of the study and evaluation of physical health in women of reproductive age with HD in puberty it was revealed a significant share of chronic tonsillitis in puberty in 60.5%, diffuse goiter in 40.7%, retinal angiopathy in 30.2%, and vascular dystonia in 22.1%, which confirms the importance of somatic diseases in developing of HD in puberty and confirmed by other studies [5, 9].

We found that in 17.4% of examinees the BMI relative to puberty was not decreased, increased of BMI › 30.0 kg /m2 in 9.3% of examinees. According to the literature, women of reproductive age with a BMI over 30 kg / m2 the prevalence of infertility is 2.7 times higher than in women with normal body weight [3]. Decrease in body weight in reproductive age, relative to puberty, occurred in a significant number of women of the study group - 73.3%, herewith in 88.9% to the normal body weight and in 11.1% to overweight. This provided an opportunity to identify predictors and predicting supplies for women of reproductive age with HD in puberty to a normal body weight group - BMI (18-24,9 kg /m2).

As a result of multivariate analysis we received a set of predictors; the most important of them become a chronic tonsillitis during puberty, and the least - the threatened miscarriage in the mother during the first trimester.

The infertility was diagnosed in 40.7% of women of reproductive age with HD in puberty, including the primary in 60.0%, the secondary - in 40.0% of women of the study group. It was determined that the RR of

primary infertility in women of reproductive age with HD and obesity in puberty, relative to overweight was › 1 (RR = 1.08; 95% confidence interval 0.5-2.1), of secondary infertility › 1 (RR = 1.3; 95% CI 0,5-3,4). Similar studies, which determined the risk of obesity in puberty, relative to normal body weight, showed an increase of infertility the risk in 4 times [6].

Conclusion. It was found that the decrease in body mass (by BMI) in reproductive age, relative to puberty, occurred in 73.3% of women of reproductive age with HD in puberty, the BMI has not changed at 17.4%, an increase in BMI › 30.0 kg/m2 was found at 9,3% of examinees.

It was identified the RR of primary infertility in women of reproductive age with HD in puberty and obesity, relative to overweight, was › 1 (RR = 1.08; 95% confidence interval 0.5-2.1), of secondary infertility › 1 (RR = 1.3; 95% CI 0,5-3,4).

It was determined a set of predictors, which allows to predict the presence of a normal body mass (BMI 18-24,9 kg /m2) in reproductive age in women with HD in puberty, the predictors are arranged in descending order: chronic tonsillitis, abnormal uterine bleeding in puberty, brain ischemia in neonatal period, herpetic infection and diffuse endemic goiter in puberty, the threatened miscarriage in the mother during the first trimester.

Literature

1.Kovaleva J.V. The role of obesity in the development of menstrual and reproductive function disorders // Russian Gazette of Obstetrics and Gynecology. 2014. № 2. P. 43-51.

2.Lysyak D.S., Zabolotskikh T.V., Bystritskaya T.S. Preserving of reproductive function in women with a primary oligomenorrhea in anamnesis // Bulletin of the physiology and pathology of respiration. 2014. № 53. P. 103-108.

3.Mahmoud T. Obesity as a reproductive barrier. Are we ready for the issue? // Obstetrics and gynecology. 2015. №7. P. 21-25.

4.Podzolkova N.M., Koloda U.A., Podzolkov A.V. Treatment of infertility in obese patients: a modern view on the problem // Problems of reproduction. – 2012. – №3. – P. 37-40.

5.Suturina L.V., Kolesnikova L.I. The main pathogenetic mechanisms and methods to correct reproductive disorders in patients with hypothalamic syndrome. Novosibirsk: Science, 2001. 132 p.

6.Polotsky A.J., Hailpern S.M., Skurnick J.H., Lo J.C. Association of adolescent obesity and lifetime nulliparity--the Study of Women's Health Across the Nation (SWAN) // Fertil Steril. 2010. Vol. 6. P. 2004-11.

7.He F., Liu J. Prevalence of obesity among primary students from 2009 to 2014 in China: an update meta-analysis // Int. J. Clin. Exp. Med. – 2014. – Vol.15, № 12. – P. 5348- 5352. (166)

8.Mc Pherson N.O., Lane M. Male obesity and subfertility, is it really about increased adiposity? // Asian J. Androl. – 2015. – Vol.23. – P. 1008- 1012. (194)

9.Zhukovets I., Leshchenko O., Atalyan A., Podoshvelev D. The main risk factors of menstrual disorders among adolescent girls with hypothalamic dysfunction // Gynecological Endocrinology Abstracts from the ISGE World Congress 2016 ISSN: 0951-3590 (Print) 1473-0766 (Online) Journal homepage: http://tandfonline.com/loi/igye20. 32(S1). P. 99.

HISTOCHEMICAL CRITERIA OF MORPHOMETRIC CHARACTERISTICS OF THE LEFT LUNG IN RATS WITH TOTAL COOLING OF THE BODY

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Morphometric characterization of the respiratory part of lungs reflects the complexity of the ventilation-perfusion relationships in the lungs acinus [1]. Opening the chest is an obligatory stage in lung morphological studies. Therefore, morphological dissection leads to the development of lung atelectasis. It in turn, casts doubt on the results of the study of the respiratory part of lungs [2]. The purpose of the researchis to study criteria of histochemical features of morphometric parameters of the respiratory part of the left lung in rats.

Research methods. The study was conducted on male rats aged 4 months body weight 300-350, grams aged in an amount of 20 pieces. Created the following groups: Group 1 - intact, 2 group of rats was exposed to cold exposure at -10 ° C for three hours. for 10 days. After slaughtering of the chest rats left lung removed. Light rats were fixed in formol calcium. Pieces of light embedded in gelatin. Pulmonary cryostat sections were made. Histological sections were stained with an alkaline solution of Sudan black B.

Results of the study. We conducted a study organometric left lung in rats. Block diagram showing the method of analysis organometric left lung is shown in Fig. 1 riand Fig 2. Fig. №1 is a diagram of the medial sur-