CONDITIONS OF THE PITUITARY-GONADAL SYSTEM DEPENDING ON NOSOLOGICAL FORMS OF CHRONIC LUNG DISEASES IN CHILDREN

Oliya Sharipova

Kimyo international universitety in Tashkenthead of the department (professor)

Mamatkulova D.Kh.

Associate Professor, Department of Pediatrics and Medical Genetics, Samarkand State Medical University. Samarkand, Uzbekistan

Аннотация. В статьи проведена оценка полового развития и изучен гормональный статус у больных с хроническими заболеваниями легких (ХЗЛ). В исследование были включены 140 детей с ХЗЛ. Результаты исследования показали существенную разницу во времени начала пубертатных изменений, интенсивности развития вторичных половых признаков (ВПП), а также функциональные нарушения в системе гипофиз-гонады, которая характеризовалась повышением концентрации ФСГ, снижением ЛГ и снижением тестостерона у мальчиков больных с ХЗЛ. У девочек с ХЗЛ не отмечалось значительного преобладания уровня ФСГ в начале пубертатного периода, содержание ЛГ на всем протяжении пубертатного развития было достоверно ниже, а также уровень эстрадиола был достоверно низким в старших возрастных группах. Таким образом, ХЗЛ отрицательно влияет на половое развитие детей, что диктует необходимость разработки определенных практических мероприятий в этом направлении.

Ключевые слова: хронические заболевание легких; половое развитие; гормоны крови.

Аннотация. Сурункали ўпка касалликлари (СЎК) билан касалланган беморларнинг гормонал ҳолати ўрганилган ва жинсий ривожланишни баҳолаш ўтказилган. Тадқиқотда 140 нафар СЎК бўлган болалар иштирок этди. Тадқиқот натижалари балоғат ёшидаги ўзгаришлар бошланган вақт, иккиламчи жинсий хусусиятлар интенсивлиги, шунингдек, гипофиз тизимидаги функционал бузилишлар даврида сезиларли фарқни кўрсатди, бу эса СЎК бор ўғил болаларда тестостерон ва лютеинловчи гормон миқдорининг камайиши, фолликула стимулловчи гормоннинг кўпайиши билан намоён бўлди. СЎК бўлган қизларда балоғат ёшининг бошида фолликула стимулловчи гормон миқдорининг сезиларли ошиши кузатилмади, балоғат ёшидаги қизларда лютеинловчи гормон миқдори сезиларли даражада кам эканлиги ва катта ёшли болалар гуруҳларида эстрадиол миқдори сезиларли даражада кам эканлиги аниқланди. Шундай қилиб, СЎК болаларнинг жинсий ривожланишига салбий таъсир қилади, бу

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эса ушбу йўналишда муайян амалий чораларни ишлаб чиқиш зарурлигини тақозо этади.

Калит сўзлар: ўпканинг сурункали касалликлари; жинсий ривожланиш; қондаги гормонлар.

Abstract. The assessment of sexual development and the study of the hormonal status in patients with chronic lung diseases (CLD). The study included 140 children with CLD. The results of the study showed a significant difference in the time of the onset of pubertal changes, the intensity of the development of secondary sexual characteristics (VPP), as well as functional disorders in the pituitary gland system, which was characterized by an increase in FSH concentration, a decrease in LH and a decrease in testosterone in boys with CLD. In girls with CLD, there was no significant predominance of FSH levels at the beginning of puberty, the LH content throughout puberty was significantly lower, and the level of estradiol was significantly low in older age groups. Thus, CLD negatively affects the sexual development of children, which dictates the need to develop certain practical measures in this direction.

Keywords: chronic chronic lung diseases, sexual development**,** blood hormones .

INTRODUCTION

Chronic lung disease (CLD) is one of the serious health problems in all countries of the world due to frequent disability at a young working age, a decrease in the quality of life of patients due to frequent and prolonged exacerbations.

According to the World Health Organization (WHO), the prevalence of chronic obstructive pulmonary disease is 9.34 cases per 1,000 people[2]. Currently, 64 million people suffer from chronic obstructive pulmonary disease, while the number of such children in the world will increase by an average of 3% every year [2,3,4]. In many countries of the world, CLD ranks third in terms of morbidity and mortality [1].

Long-term and serious illnesses, causing a whole complex of metabolic and morphological changes in the body, can significantly inhibit physical and sexual development and cause disturbances in morphogenesis [1,5,8,9].

In addition, physical as well as sexual development is influenced by any disorders in the reproductive system, and they begin to manifest themselves in one of the critical and most vulnerable stages of the formation of this system - during puberty [9,10,11].

At the same time, the physical and sexual development of children is one of the most important criteria for assessing the health status of the population [2,6,9]. Children with physical and sexual underdevelopment cannot cope with the educational load due to rapid physical or mental fatigue. An equally important

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factor is that the delay in physical and sexual development often leads to difficulties in psychological and social adaptation, the consequences of which may persist in the future, when they achieve normal physical development [3,4,6,7].

The literature provides information that children with CLD lag behind in physical development. Issues related to sexual development in CLD can be considered virtually unexplored.

Based on the above aspects, this problem seems to be quite urgent.

Purpose of the study: to study the features of the sexual development of children with chronic lung diseases.

Characteristics of children and research methods: 140 patients with CLD at the age from 12 to 16 years were examined. Of these, 55 patients with chronic bronchitis (CB), 45 children with bronchiectasis and 40 patients with bronchial asthma (BA). Bronchological examination revealed cylindrical bronchiectasis in 39 (86.6%) patients and saccular in 6 (13.4%) patients. At the same time, left-sided lower lobe cylindrical bronchiectasis occurred in 16 (35.6%), in the lingular segment of the left lung in 10 (22.2%), right-sided middle lobar bronchiectasis in 10 (22.2%), right-sided lower lobe in 5 (11.1%) %) and bilateral in 4 (8.9%) sick children. The sex distribution of the surveyed children showed the predominance of 88 boys (62.8%) over 52 girls (37.2%). The age composition of the patients was as follows: 11 years old -18 (12.9%), 12 years old - 19 (13.5%), 13 years old - 23 (16.4%), 14 years old -29 (20.7%), 15 years old - 24 (17.1%), 16 years old - 27 (19.4%) patients.

The degree of sexual development of patients was assessed in accordance with the stages of sexual development according to Tanner. When assessing the sexual development (PD) of boys, the severity of pubic (P) and axillary hair (Ax), the size of the penis and testicles were determined. When assessing the PR of girls, the severity of pubic and axillary hair growth, the growth of the mammary glands (Ma) were determined. When studying the menstrual function (Me), ttention was paid to the period of menarche and the further formation of the cycle.

In children with CLD, the basal level of hormones was determined in blood serum: STH, TSH, T3, T4, FSH, LH, estradiol and testosterone. Determination of hormones was carried out using standard kits from "Human" by ELISA.

Results and discussion: The results obtained when assessing the PR in boys showed that there is a significant difference in the time of the onset of pubertal changes, the intensity of development and the severity of secondary sexual characteristics (SSP) in CLD patients, compared with their practically healthy peers. Genetometric studies have shown that in patients with bronchiectasis at the age of 12, 13, 14 years, the size of the genital organs significantly ($P<0.05$) lagged

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behind. In contrast to bronchiectasis, in the group of patients with CB and BA, the size of the genitals significantly (P<0.001) lagged behind at the age of 14, 15, and 16 years.

Analysis of the formation of secondary sexual characteristics in boys with bronchiectasis showed that at the age of 15-16 years, P_2 Ax_2 was noted in 18 (69.2%) of 26 patients, while in boys of this age it was normal according to J. Tanner's method - P_{3-4} . In the group of patients with chronic bronchitis at the age of 15-16 years, P1 Ax1 was noted in 10 (71.4%) of 14 patients and only 4 (28.5%) had P_2 Ax_2. It was found that all 100% of boys with bronchiectasis were lagging behind in the formation of secondary sexual characteristics in relation to healthy ones. In boys with BA at the age of 15-16, P1 Ax1 was detected in 6 (27.2%) of 22 patients, while P_2Ax_2 was found in 13 (59%).

In general, delayed sexual development was detected in 85.7% of the examined boys with CLD. An analysis of sexual development depending on the duration and severity of the disease showed that the degree of delayed sexual development correlates with the duration and severity of chronic lung diseases (r = 0.50; r = 0.39 (P <0.05)). So, signs of delayed sexual development in the group of patients with disease duration of 5-6 years were detected in 66.7%, with a prescription of 7 years - in 88.9%, 8 and more years - in 100% of boys with chronic lung diseases.

During a clinical examination of sick girls, it was found that by the age of 16, sexual hair growth in the P_2Ax_2 stage was in 54.4%, and in the P_3Ax_3 stage it was only in 33.3% of patients, while in the group of healthy peers this formula looks like $P_{3-4}Ax_3$. In addition, in all age groups, there was a tendency to lengthen the timing of certain stages of mammary gland development in comparison with the group of healthy girls. By the age of 16, the mammary glands in 24.4% of patients were in the Ma_3 stage, and in the rest of the patients they did not exceed II degree according to Tanner. It is known that the most objective indicator of the puberty of girls is the time of the appearance of the first menstruation. In our republic, according to F.M. Ayupova (1998), the average age of menarche is 12 years 10 months. The analysis of our data showed that at the age of 13, among girls with chronic lung diseases, no persons with the onset of menstruation were identified. Violation of the formation of menstrual function was more often detected in female patients with bronchial asthma, in whom systemic glucocorticoids were used for treatment. The incidence of delayed puberty among girls with chronic lung diseases was often detected in older age groups and amounted to 82.7%.

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Functional disorders in the pituitary-gonadal system were confirmed by the results of studies of the content of gonadotropins and sex hormones in the blood serum (Fig. 1).

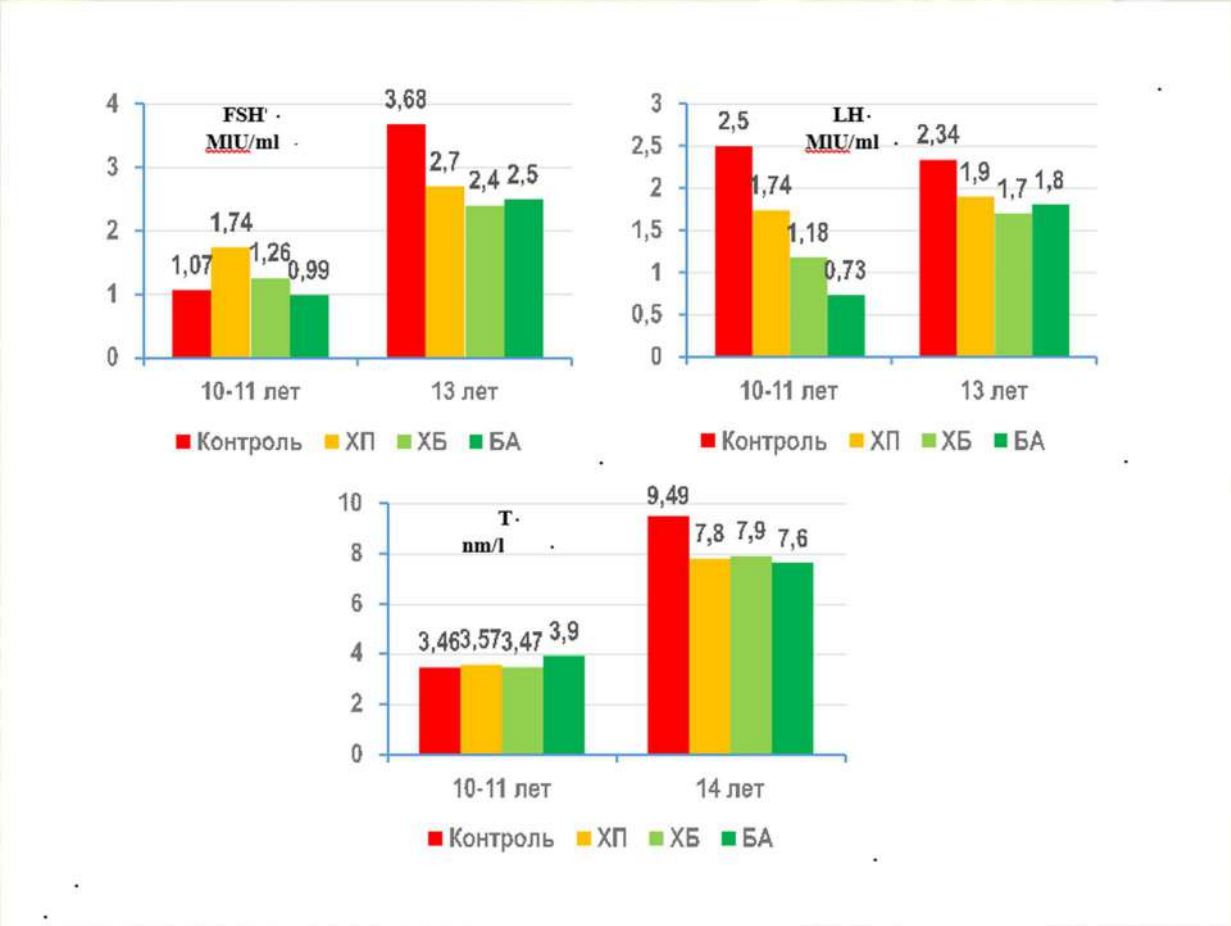


Fig. 1. The content of gonadotropic hormones in the blood serum of boys with CLD

The increase in the secretion of gonadotropic hormones of the pituitary gland during puberty in healthy boys is heterogeneous, in almost all age groups LH prevails over FSH. The results of our studies show that in patients with bronchiectasis and CB at the age of 10-11 years, there was an increase in the level of FSH ($P < 0.05$), a significant decrease in LH in patients with bronchiectasis and BA (1.18 ± 0.26; 0.73 ± 0.32 MlU/ml, respectively) and an insignificant increase in testosterone in all clinical forms of CLD (3.57 ± 0.67; 3.47 ± 0.55; 3.9 ± 0.67 nmol/L). This, apparently, is due to the fact that in children at the beginning of puberty in response to hypoxia, the FSH concentration increases compensatory, and LH remains low ($P < 0.001$). The synergism of the action of these hormones is disrupted from this age. In patients with CLD from the age of 14, the testosterone level begins to decrease significantly (7.8 ± 0.42; 7.9 ± 0.33; 7.6 ± 0.42 nmol/L) compared with the control group (9.49 ± 0.36 nmol/L $P < 0.01$). The decrease in

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testosterone indicates that in patients with CLD, the sensitivity of the gonads to LH is reduced.

The revealed low genetic indicators in boys with CLD are interrelated with low levels of FSH and LH r = 0.33; r = 0.38.

A comparative study of the state of the pituitary-gonadal system depending on the clinical forms of CLD showed that the most noticeable changes occur in patients with chronic bronchitis.

The results of the study of the pituitary-ovarian system in girls with CLD showed significant changes in the production of some sex hormones (Fig. 2). As can be seen from Fig. 2, the peak increase in pituitary FSH secretion in healthy girls occurs at the age of 12-13 years.

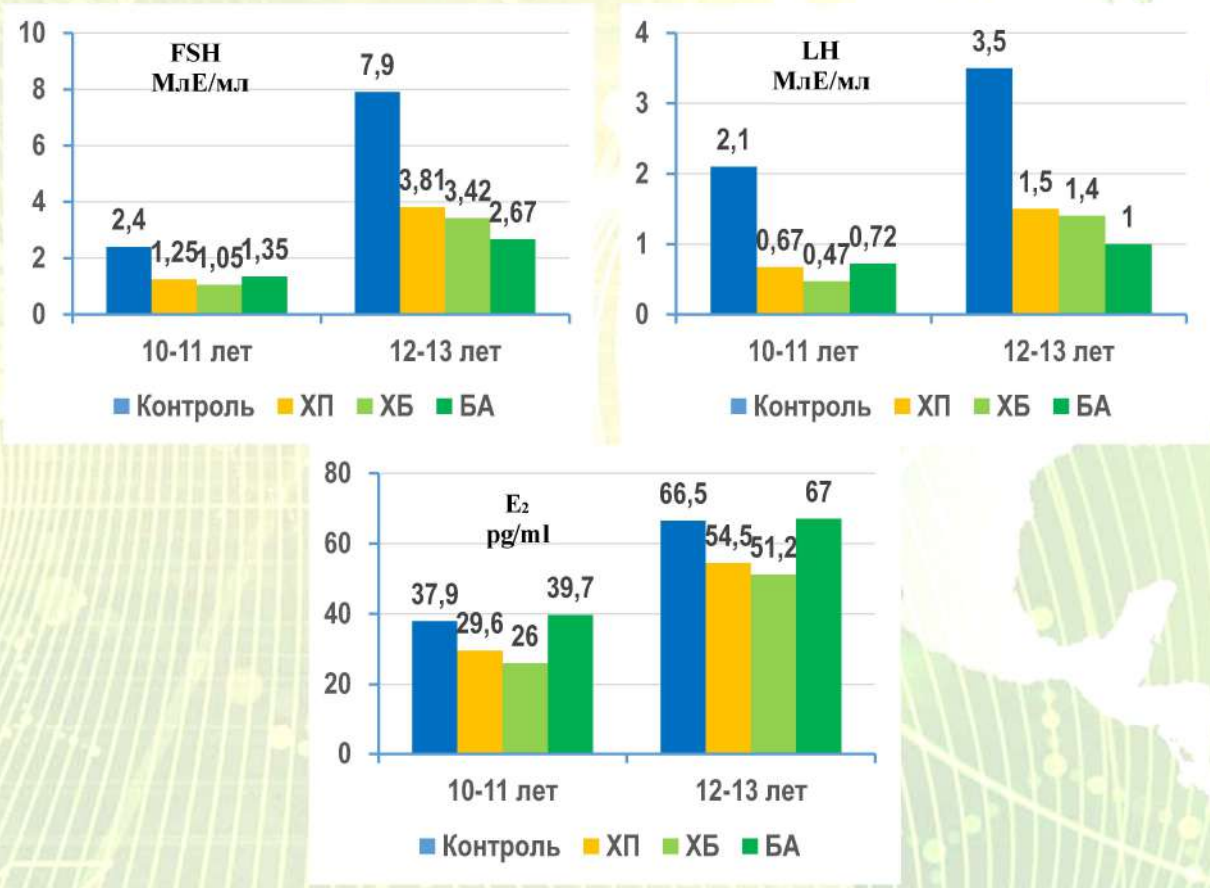


Fig. 2. Hormonal characteristics of the pituitary-ovarian system in girls with CLD

In female patients with CLD, there was no significant predominance of FSH levels in the blood serum at the beginning of puberty (P <0.05; P <0.001). The LH content throughout puberty was significantly lower and remained low in late puberty (P <0.05; P <0.001).

When studying the level of FSH and LH, depending on the clinical variants of CLD, we noted the most profound changes in the group of BA patients. It was

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found that the level of estradiol in girls with CLD was significantly low in older age groups (P <0.001). During the analysis, depending on the severity of the disease, we found that the level of sex hormones was significantly lower in patients with severe bronchiectasis and CB. In female patients with severe BA, the level of sex hormones was significantly (P <0.05) higher than in the control group.

Thus, the results of the study allowed us to conclude that CLD negatively affects the sexual development of children, which dictates the need to develop certain practical measures in this direction.

REFERENCES.

1. Astafieva N. G. “Medical and social examination of adolescents with chronic lung diseases. // Russian Bulletin of Perinatology and Pediatrics, N:6, 2003, p. 22-26.
2. Bogdanova A.V. et al. Epidemiological aspects of chronic diseases of small bronchi in children. // Bulletin of modern clinical medicine, 2015, volume 8, N:. 2.- P.43-50.
3. Blinova I. M., Botvinyeva V. V. Characteristics of bilateral chronic pneumonia in children. (Proceedings of the 7th National Congress on Respiratory Diseases: Abstracts. Report - Moscow. 1997. - P. 232.
4. Sharipova O.A., Bobomuratov T.A., Turaeva N.O. Evaluation of sexual development in patients with bronchiectatic disease // XXIXth International Scientific and Practical Conference “International scientific review of the problems and prospects of modern science and education”. – Boston, 2016. № 21 (31) - pp. 74–76.
5. Iskandarova Sh.T. Physical development and morbidity of adolescents living in Tashkent // Pediatrics. 2003, S. 10-12.
6. Muhamadieva L., Rustamova G. Intrabronchial laser therapy in children with chronic bronchitis and chronic pneumonia //European Science Review. – 2017. – №. 1-2. – C. 85-86.
7. Prakhin E.I., Gritsinskaya V.L. Characteristics of methods for assessing the physical development of children. // Pediatrics 2004, no. 2 p. 60-62.
8. Ulanova L.N. and others. On the standardization of indicators of puberty in children and adolescents // Pediatrics 1981. №4. P. 70-72.
9. Bobomuratow T.A., Sharipova O.A., Mamatkulova D.X., Bakhronov Sh.S. Features of sexual development statejf the pituare-gonad system and measures of secondare prevention in sick children with chronic bronchitis. International Iornal of Pharmaceutical Research. 377-381.2020.

ISSN 3030-3907

10. 10.Yende S., Waterer G. W., Tolley E. A. et al. Inflammatory markers are associated with ventilator limitation and muscle dysfunction in lung disease in well-functioning elderly subjects // Thorax. - 2006; 61: P.10-16
11. Sharipova O.A., Bakhronov Sh.S., Rustamova G.R. Compative evaluation of the effectiveness of secondary stage prophylaxis in patients with chronic bronchitis witch delayed sexual dewelopment. East European Science Journal. Vienna, No. 11 (51). 2019. p. 61-64.

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