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EFFICIENCY OF SECONDARY STAGE PREVENTION IN CHILDREN WITH BRONCHIAL ASTHMA

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ABSTRACT

A study was conducted to study the characteristics of physical development depending on the severity of the course and measures of secondary prevention in patients with bronchial asthma (BA). The study included 100 children with bronchial asthma aged 10 to 16 years. Of these, 38% are girls and 62% are boys. Intermittent asthma (grade I) was observed in 15%, mild persistent (grade II) in 25%, moderate (grade III) in 40%, and severe persistent (grade IV) was observed in 20% of patients. It was revealed that bronchial asthma negatively affects the physical development of children of both sexes. The complex staged secondary prevention proposed by us for children with BA contributed to the improvement of both the underlying disease and indicators of physical development.

Introduction

Chronic diseases of the lower respiratory tract are an actual problem of pediatrics. This is due to the fact that in all countries of the world the incidence and

mortality from this pathology is increasing. According to a number of authors, the prevalence of chronic diseases of the lower respiratory tract, including bronchial asthma, ranges from 13.7 to 21.2 per 1000 children [1;5;10]. The problem of bronchial asthma has acquired not only medical, but also socio-economic significance [8]. In particular, all aspects of the pathogenesis, diagnosis and treatment of chronic diseases of the lower respiratory tract still cannot be considered fully understood [9;11]. Insufficient attention is paid by pediatricians to the issue of diagnosing extrapulmonary manifestations of chronic diseases of the lower respiratory tract in children [7;11], and among them the most common one is physical retardation. At the same time, they lead to difficulties in psychological and social adaptation, the consequences of which have a negative impact on the social integration of children and adolescents [4;5].

Knowing the risk factors for delayed physical development will in many cases prevent this pathology, as well as take them into account when choosing treatment methods.

The physical development of children of different ages is affected by the pathology of various organs and systems of the body. As is known, severe bronchial asthma causes a number of pathological changes in the body: impaired microcirculation, arterial hypoxemia, tissue hypoxia, and pathobiochemical and immunological changes induced by them [4;8;9], which in turn leads to impaired growth and development of the body.

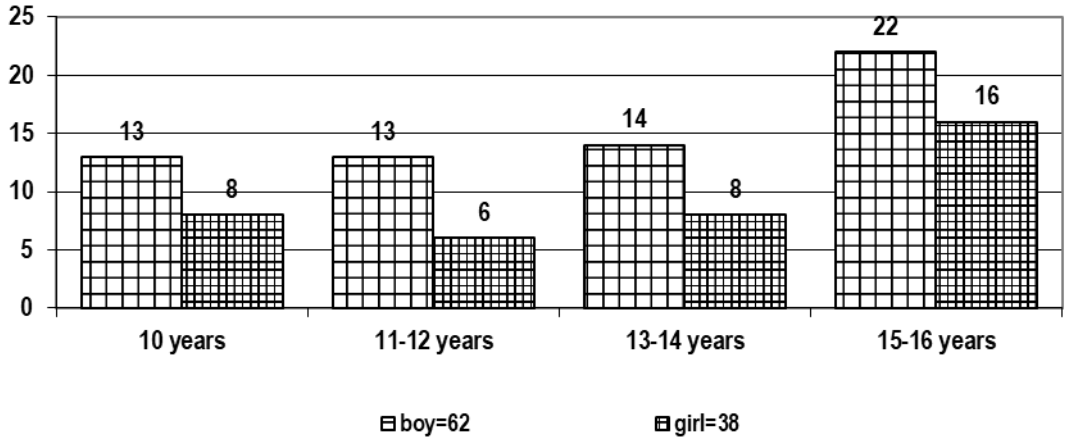
In addition, one of the most pressing issues of scientific research on this issue is the development of secondary prevention measures and its effectiveness, as well as the improvement of measures aimed at improving the physical development and quality of life of patients.

There are few works on the study of physical development disorders in children with bronchial asthma, and the results obtained are contradictory.

Aim research: to evaluate the effectiveness of secondary prevention on the physical development of children with bronchial asthma, depending on the severity of the condition.

Materials and methods. We examined 100 (atopic - 86, non-atopic - 14) children with bronchial asthma aged 10 to 16 years. Of these, 38% are girls and 62% are boys Fig.1.

Figure 1. Distribution of patients by age and gender



According to the duration of the disease, the patients were distributed as follows: 11% of children under 5 years of age, 15% of 6 years, 17% of 7 years, 18% of 8 years, 12% of 9 years, and 27% of patients had 10 years or more of asthma. . The average duration of the disease was 7.8±1.8 years. Children were admitted for inpatient treatment during an exacerbation of BA. According to the severity of the condition, the patients were divided as follows: Intermittent BA (I degree) was observed in 15%, mild persistent (II degree) in 25%, moderate (III degree) in 40% and 20% of patients had severe persistent (IV degree).). In the

complex of basic therapy, patients who took inhaled corticosteroids accounted for 55%, systemic glucocorticosteroids - 25%, and patients who received only inhaled β2-agonists and cromones - 20%.

The function of external respiration was studied using a spirometer manufactured by Medicor (Hungary). Depending on the indicators of respiratory function, the patients were divided as follows: I degree of violation of respiratory function was observed in 46%, II-degree in 38% and III degree in 16% of patients.

Peak flow measurements in patients with intermittent and mild persistent BA during the period of exacerbation were reduced from 15% to 27%, moderate and severe persistent BA PEF were significantly ($P<0.001$) below the norm and ranged from 37% to 49% of the average value.

In the study of the saturation of capillary blood with oxygen, we found a decrease in oxygen to 84.8±3.8% in patients with severe BA, while outside the exacerbation of the disease, this figure was 92.4±2.9%, in healthy children 98.5± 1.5%.

Indicators of physical development were assessed by absolute values of length, body weight and chest circumference. Body mass index was calculated using the formula BMI=weight/height (m2). The obtained data were compared with the standards of growth and development of children recommended by WHO (2007).

In the blood serum of children examined by the enzyme immunoassay method, the levels of hormones were determined: thyroid-stimulating hormone (TSH, mlU/l), free thyroxine (T4, μg/dl), triiodothyronine (T3, ng/ml), growth hormone (GH, ng/ml).

Statistical processing of the results of the study was carried out using modern computing systems such as IBM using a package of standard programs "Excel". To identify the relationships between the analyzed indicators, a correlation analysis was performed using the correlation coefficient r and checking its significance using the Student's t-test and Pearson's $\chi 2$.

Comprehensive treatment and phased secondary prevention was carried out using Reamberin, calcium D3, aevit and thymus preparations. The main pharmacological effect of

Reamberin is due to its ability to enhance the compensatory activation of aerobic glycolysis, reduce the degree of inhibition of oxidative processes in mitochondria, and also increase the intracellular fund of macroergic compounds [2]. Reamberin was injected intravenously. Depending on the severity of the disease, the course of treatment was 7–10 days. Taking calcium supplements in combination with vitamin D increases the life expectancy of the population, improves its quality [3;12]. In addition to vitamin D, vitamins A and E have a great influence on the absorption and metabolism of calcium in the body.

Results and its discussion. When analyzing physical development, harmonious physical development was determined in 20% of patients in whom the duration of the disease ranged from 3 to 5 years and mild BA. PFR was detected in 80% of patients, including 27 (71.6%) girls and 53 (85.4%) boys.

In BA boys aged 10, 11, 12, 15 years and in girls aged 10,12,13 and 16 years, growth rates were in the zone (–2SD)–(–3SD), and at the age of 13,14 and 16 years in boys and 14, 15 years old in girls, growth rates were within the average values (–1SD). Analysis of body weight indicators in patients with BA shows that according to this parameter at the age of 11, 12,15,16 years in boys and 10, 14, 15, 16 years in girls were in the zone (–3SD) compared with the standard ($P<0.05$; $0.01 P<0.001$). When determining BMI, a noticeable body weight deficit was revealed in patients with BA above the indicated ages and amounted to (–2SD) – (–3SD).

When comparing the data on the physical development of children with the severity and duration of BA, we noted a clear relationship between them. The more severe and longer the course of the disease, the more often the physical development of children was delayed $r=0.50$; $r=0.39$ ($P<0.05$). In the differential analysis, we noted that children with AD initially lose weight, and if the symptoms of the disease persist, they also lag behind in growth. Along with this, we found that children who received high doses (54%) of systemic or inhaled corticosteroids were significantly shorter in stature. Therefore, our analyzes show that the severe course of AD and the early onset of the disease leads to a decrease in weight and height.

An individual analysis of anthropometric data revealed that in 10% of patients with asthma at the age of 15-16 years with delayed puberty, body length indicators were above average ($P<0.05$).

The study of the hormonal status in patients revealed significant features in relation to the group of healthy children. The level of growth hormone in BA children was significantly reduced in older age groups, both in boys and girls. So in boys aged 13-14, 15-16 years was (1.7±0.12 ng/ml; 0.94±0.15 ng/ml) compared with the control group (2.4±0.19 ng/ml, 2.68±0.14 ng/ml, $P<0.05$, $P<0.001$).

Elevated serum levels of TSH were found in all examined, both girls and boys with BA (2.3±0.07 mlU/l -3.1±0.13 mlU/l, respectively 1.21±0.05 mlU/l). l–1.69±0.09 mlU/l) compared with the control group ($P<0.001$). The content of the free T4 fraction was significantly ($P<0.05$; $P<0.001$) reduced in all age groups (5.84±0.9 µg/dl–6.35±0.42 µg/dl) compared with healthy (9.0±0.46 µg/dl–9.72±0.47 µg/dl).

Drawing a conclusion, we can say that, for children with asthma, puberty is a more difficult stage than for healthy children. Chronic hypoxia, which is present in severe asthma, causes a state of chronic stress in the body of children, which contributes to a decrease in physical development.

Taking this into account, we proposed a complex therapy scheme and developed the 2nd and 3rd stages of complex prevention, taking into account the delay in physical and sexual development in bronchial asthma (Table 1).

Table 1

The scheme of treatment of patients with bronchial asthma with a delay in physical development

Bronchial asthma with moderate course		
Stages of treatment	**Medications, dosage, method of application**	**Duration**
II-stage for the purpose of secondary prevention, after 6 months	- Reamberin 10ml/kg IV drip. - Aevit 1 capsule 1 time per day, inside. -Calcium-D3 1 tablet (500 mg Ca++ and 400 IU vitamin D) 1 time per day	7 days 1 month 2 months
Stage III for secondary prevention, after 12 months	- Reamberin 6ml/kg - Aevit 1 capsule 1 time per day, inside. -Calcium-D3 1 tablet 2 times a day.	7 days 1 month 1 month
Bronchial asthma with severe course		
II-stage for the purpose of secondary prevention, after 6 months	- Reamberin 10ml/kg. - Aevit 1 capsule 1 time per day, inside. -Calcium-D3 1 tablet 1 time per day.	7 days 2 months 3 months
Stage III for secondary prevention, after 12 months	- Reamberin 10ml/kg IV drip. - Aevit 1 capsule 1 time per day, inside. -Calcium-D3 1 tablet 2 times a day. - Thymus preparations 100 mcg 1 time per day / m.	7 days 2 months 3 months 6 days

Patients received stage I of complex therapy together with conventional therapy in a hospital after relief of an attack. To determine the effectiveness of complex therapy, the patients

were divided into two groups: group I consisted of 43 patients with BA who, in the complex of generally accepted therapy, received the scheme of the staged treatment proposed by us, group II included 37 patients who received traditional complex treatment.

A comparative study of the effectiveness of complex therapy with traditional therapy revealed a faster positive clinical dynamics, elimination of symptoms of BA exacerbation. The positive results of this method of treatment were confirmed by the parameters of the study of the function of external respiration (RF) in dynamics. After complex treatment in patients of the main group, the number of children with normal respiratory function increased by 2 times, 1.5 times more patients with I degree of violations of the ventilation function of the lungs. Along with this, the number of children with II or III degree of respiratory dysfunction has noticeably decreased. In the control group of children who received traditional complex treatment, no pronounced dynamics of the studied parameters of the ventilation function of the lungs was observed.

Patients of the main group for the purpose of secondary prevention after 6, 12 months repeatedly received II and III stages of complex treatment.

Growth dynamics in healthy adolescents is associated with gonadal activation. So, at the age of 12-15 years, boys have a period of stretching of growth from 146.1±5.7 cm to 166.12±6.1 cm. But stretching of growth is uneven, spasmodic. According to Kamilova [7], growth peaks in healthy boys in our region occur at 11 years old (5.4±4.9 cm), 14 years old (7.86±5.2 cm) and 15 years old (7.42±5.4 cm).

A follow-up observation showed that in BA boys in the traditional group, growth increases without peaks of 2–2.5–3 cm per year, while in patients of the main group who received Reamberin, Aevit, calcium D3, and thymus preparations in the complex treatment, after secondary prevention growth increased spasmodically by 6.9±0.4 cm and 7.6±0.6 cm per year.

A follow-up observation conducted in girls with BA showed that in patients in the traditional group, growth increased by 2.5–2.75 cm per year, without jumps, while growth rates

in the main group were significantly better than in the comparison group. Thus, the average growth rate in the group receiving secondary prophylaxis in the first year ranged from 6.3±0.6 cm to 7.23±0.72 cm/year, in the second year it was 6.8±2.4 cm/year. year compared with the control group (3.5±1.3 cm/year ($p<0.001$)). The mean standard deviation of height reached the lower limit of normal (–1SD-2SD) after 2 years of treatment and approached the target value after 3-4 years.

In children of the main group, positive dynamics occurred in terms of body weight. In addition, in patients of the main group in all age groups, there was an increase in the mass of the growth index, which indicates a noticeable increase in body weight. So, in patients before treatment, the deviation of the body mass index, according to WHO standards (BMI), was -2CO-3CO. After the second stage of prevention, 76% of patients in the main group had no deviations.

Assessment of the somatotropic function of the pituitary gland was carried out after a year of staged prevention. The release of somatotropic hormone (STH) increased both in the control group (1.16±0.17 ng/ml) and in the main group (1.95±0.12 ng/ml), but the figures were higher in the main group of patients.

In follow-up in patients receiving secondary prophylaxis, a year later, the content of free T4 significantly increased (9.1±0.62 ng/ml) in all age groups compared with the control group (5.91±0.46 ng/ml P1< 0.001), and the level of thyroid-stimulating hormone (2.3±0.06 mlU/l) decreased to the concentration of healthy (2.12±0.14 mlU/l P1<0.001), while in the control group the level of TSH remained high (3 .1±0.1 mlU/l).

Conclusion. Thus, the results obtained in the assessment of physical development indicated that the severe course of BA is the cause of a delay in the growth and development of children. The complex staged secondary prevention proposed by us for children with BA turned out to be quite effective and contributed to the improvement of both the underlying disease and indicators of physical development.

Literature

1. Afonina N.A. Morbidity of the child population with respiratory diseases as a medical and social problem (literature review). Russian Medical and Biological Bulletin. Academician I.P. Pavlova. 2010;4:157-162. [Afonina N.A. The incidence of respiratory diseases in the child population as a medical and social problem (literature review). Russian Medical and Biological Bulletin named after Academician I.P. Pavlova. 2010; 4: 157-162(in russ)].

2. Batotsyrenova Kh. V., Livanov G. A., Shestova G. V. Neuroprotective effects of the succinate-containing antihypoxant reamberin in patients with toxic-hypoxic brain damage // Medical News of Georgia. 2012;4(205):24-31. [Batotsyrenova Kh. V., Livanov G. A., Shestova G. V. Neuroprotective effects of succinate-containing antihypoxant reamberin in patients with toxicohypoxic brain damage // Medical News of Georgia. 2012; 4 (205): 24-31(in russ)].

3. Behzad Heidari, MD, Yahya Javadian, Mahmoud Monadi, MD Vitamin D status and distribution in patients with chronic obstructive pulmonary disease versus healthy controls. // Caspian J Intern Med. 2015 spring; 6(2):, R. 93–97.

4. Bobomuratov T.A., Sharipova O.A. Assessment of the physical development of pubertal boys with bronchial asthma “Achievements, problems and prospects for protecting the health of children and adolescents” Proceedings of the Republican scientific and practical conference. - Tashkent., 2010; 204–205.

5. Bogdanova A.V. et al. Epidemiological aspects of chronic diseases of small bronchi in children. // Bulletin of modern clinical medicine, 2015; 8:2:43–50. [Bogdanova A.V. et al. Epidemiological aspects of chronic diseases of small bronchi in children. // Bulletin of modern clinical medicine, 2015; 8: 2: 43–50(in russ)].

6. Ezhova G. Yu. Sukhovskaya O. A., Zagidullin Sh. Z. Study of the quality of life of patients with bronchial asthma during an exacerbation of the disease // Respiratory Diseases. – 2005; 1:45-49.

7. Kamilova R. T., Abdusamatova B. E., Tursunov B. F., Anvarov Sh. Sh., Musaev E. V. Age norms and assessment of puberty of girls living in various cities of Uzbekistan and Karakalpakstan // Young scientist . 2016; 27:252-255. — URL https://moluch.ru/archive/131/36669/ (date of access: 03.10.2019). [Kamilova R. T., Abdusamatova B. E., Tursunov B. F., Anvarov Sh. Sh., Musaev E. V. Age norms and puberty assessment of girls living in various cities of Uzbekistan and Karakalpakstan // Young scientist . 2016; 27: 252-255(in russ)].

8. Lapteva E. A., Lapteva I. M. et al., Systemic effects of chronic obstructive pulmonary disease at the stages of its progression. Kazan Medical Journal. – 2013; 94:5:605-609. [Lapteva E. A.,

Lapteva I. M. et al., Systemic effects of chronic obstructive pulmonary disease at the stages of its progression. Kazan medical journal. - 2013; 94: 5: 605-609(in russ)].

8. Nematovich A. J., Askarovna S. O. Mexanisms of neurovegetative regulation in bronchopulmonary diseases in children //British Medical Journal. - 2022. - Vol. 2. - No. 4. 9. Bobomuratov T.A., Sharipova O.A., Akramova N.T. Assessing the impact of secondary prevention among boys with bronchiectasis and delayed pubertal development // Science and Innovations in the Globalized world. San Diego - 2016.- Vol.1. - P.114-119.

10. Sharipova O. A. et al. Sexual development of children in normal and pathological conditions //British Medical Journal. - 2022. - Vol. 2. - No. 4.

11. Sh.S. Bakhronov, O.A. Sharipova, T.A. Bobomuratov, M.A. Melieva., Zh.N. Abdurahmanov // Clinical significance of T-31C polymorphism of IL-1β gene in recurrent bronchitis in children // Annals of the Romanian Society for Cell Biology ISSN: 1583-6258, Vol. 25, Issue 3, 2021, pp. 4742-4748.

12. Chumakova O. V., Kartamysheva N. N. Osteopenia: modern approaches to pharmacological correction // Pediatrics. - 2004. - No. 5. - S. 84–87.