Original Article

Physical And Environmental Factors In The Complex Treatment Of Allergic Diseases In Children

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Abstract

The article reveals information about the most common allergic diseases among children today. Allergic asthma in children has been reported to occur as a result of adverse effects in the environment, heavy activities, and certain changes in the respiratory tract. The importance of air and nature in the treatment of this disease, the types of treatment of respiratory organs are given with scientific theoretical basis.

Keywords; nature, asthma, ecology, allergic disease, treatment, training, children, experience, bronchi.

INTRODUCTION. Nowadays, changes and problems in the environment, the outbreak of various infectious diseases, the humanity to think about the mistakes made in the past, the threats to the lives of the population of ecological disasters force people to look back at least once. It is necessary to take drastic action using various opportunities in order to keep humanity healthy and to preserve the gene pool of the future generation. For this reason, the treatment of various dangerous diseases among children with natural means remains the demand of the time.

BASE PART. Physical factors that affect the child's body differently than medicines are used for non-specific desensitization, increasing the overall resistance of the body and for hardening, and can also be combined with taking medications, sometimes leveling their undesirable side effects. Some of the physical factors are also used in the treatment of children in the period of an attack of bronchial asthma. First of all, thermal procedures are used that have an antispasmodic and soothing effect, for example, hot hand and foot baths at a temperature of 380, gradually bringing to 39-400 for 5-7-10 minutes.

The relief of an asthma attack is helped by aeroionotherapy, which is also used in the interictal period in the form of courses of treatment. In aeroionotherapy, the therapeutic factor is ionized air particles - aeroions. A favorable effect on patients is exerted by staying in areas with a high content of small negative air ions in the air (on the banks of mountain rivers, by the sea, in the mountains).

Special studies have established that the effect of aeroins on the body was reflex. This changes the state of the nervous system and metabolism. In patients with bronchial asthma, shortness of breath decreases, the volume of breathing increases, the ciliated epithelium of the respiratory tract is activated (L.L. Vasiliev, N.S. Zvonitsky, A.N. Obrosov). Clinical observations have shown the effectiveness of treatment with negative ions of bronchial asthma, eczema, including in the youngest children (P.K. Bulatov, E.A. Gilyarevskaya, G.P. Golovanova, V.N. Faybushevich, etc.). In this regard, various devices and artificial sources of aeroins were created. The convenience of this method lies in the fact that the treatment can be carried out in the wards; During the procedure, the child does not experience discomfort.

The most common are air ionizers of the AIR-2 type and the Serpukhov-1 hydroaeroionizer.

Procedures are carried out by setting AIR-2 at a distance of 25 - 40 cm from the face of the child, so that 1 cm3 of air contains from 100,000 to 300,000 negative ions. The duration of the procedure in older children is from 10 15 to

20 minutes) daily; for a course of 15-20 procedures. A more stable effect is observed during repeated courses in 3-6 months.

Inhalations of aerosols of medicinal substances are used with great success in the complex treatment of bronchial asthma and concomitant educational bronchopulmonary changes (S.I. Edelshtein, S.M. Gavalov). With this method of administration, direct contact of drugs with the mucous membrane is created, faster absorption into the blood stream of the lymph due to the high dispersion of substances, their deep penetration up to the alveoli.

To obtain aerosols, various inhalers are used (for example, a portable aerosol inhaler PAI-1), in which the medicinal substance is sprayed with a stream of air pumped by a compressor and delivered to the patient through a mask or a special tip; for infants, transparent chambers can be used. They use bronchospasmolytic and desensitizing agents, proteolytic enzymes, alkalis, vitamins, medicinal oils, etc.

The duration of the procedure depends on the rate of consumption of medicinal substances (for PAI-1 0.15 ml / min) and on the condition of the sick child, but usually does not exceed 15-20 minutes. During the procedure, you can take a break for 3-4 minutes. After the procedure, you need to rest for 15-20 minutes. The course of treatment is up to 20-30 procedures.

Electroaerosol therapy is a method, as it were, combining aerosol therapy and air ionization, since the patient inhales dispersed and electrified drug particles (the diameter of the particles is 3-5 microns). The electric charge contributes to better storage of dispersion, greater deposition of particles in the respiratory organs and their better penetration, resulting in an increase in their concentration in pathological foci and the duration of retention in tissues. It has also been established that negatively charged particles improve external respiration.

The impact is carried out from the apparatus "Electrosol-1", the duration of the procedure is 3-7-10 minutes, daily; course of treatment 10-15-20 procedures. If necessary, the course of treatment is repeated after 3-4 weeks (G.P. Marisenko, N.A. Tyurin, M.A. Alyabyeva).

Ultraviolet rays are often used to treat children with allergic diseases. Clinical observations and special studies have established that the general ultraviolet irradiation of a child with small (suberythemic) doses stimulates the processes of nonspecific immunity, enhances the production of antibodies (I.K. Belikova, N.A. Davidova, S.I. Skiba), more intense exposure, accompanied by formation of typical erythema on the skin. They have a different effect, stimulating the sympathetic-adrenal system, the adrenal cortex, increase the activity of the antihistamine properties of the blood (increased histamine pexia, blood histaminase), which determines their positive effect in allergic diseases.

Results. General ultraviolet irradiation is carried out in children in the inaccessible period of bronchial asthma, in those who often suffer from respiratory diseases, with seborrheic eczema and neurodermatitis in order to increase nonspecific immunity. At the same time, it is necessary to remember about the possibility of photosensitivity in children with allergic diseases. Therefore, general exposures are usually carried out in the autumn-winter time, and not in the spring, when exacerbations of allergic manifestations can be observed with an increase in the intensity of natural ultraviolet radiation. General contraindications to physiotherapy should also be taken into account (active tuberculosis, the period of the tuberculin test turn, kidney disease with impaired function, hemorrhagic diathesis).

Erythemal doses of ultraviolet rays are used in children with bronchial asthma, with concomitant chronic broncho-pulmonary process in separate fields of the chest with an area of 100-200 cm2, depending on age. Local irradiation of erythema with a dose of ultraviolet rays is also indicated for neurodermatitis. The area of the irradiated skin area in children under 3 months old should be no more than 60-80 cm2, in preschoolers - 150-200 cm2. Repeated irradiation of the same area is carried out 2 days after the erythema has subsided. Given the possibility of increased skin reaction in children with exudative diathesis and individual photosensitivity to ultraviolet rays, the biodose is determined at intervals of 15 seconds after 4-6-8 and 24 hours after exposure.

Quite widely used in the complex treatment of allergic diseases in children is electrophoresis of medicinal substances. The advantage of this method of drug administration is the ability to combine the diverse physiological effects of galvanic current with the specific pharmacological effects of drugs administered in an ionized state, the creation of a skin “depot”, from where the drug enters the blood stream for a long time. The use of electrophoresis of calcium, adrenaline, novocaine, bromine, diphenhydramine, magnesium and some other medicinal substances has been scientifically substantiated (K.V. Lapina, V.N. Gromova). Depending on the clinical manifestations of allergy, electrophoresis is carried out according to the method of general exposure to the collar region, according to the nasal method, or to the chest area. Current density 0.02-0.05 mA, duration 15-20 minutes daily; for a course of 12-15 procedures.

General calcium electrophoresis with a 2-5% solution of calcium chloride has a desensitizing, sympathicotropic effect, reduces the permeability of cell membranes.

Epinephrine electrophoresis (solution 1:1000) has a bronchodilator effect, increases the vital capacity of the lungs, and helps to reduce asthma attacks. In the presence of inflammatory changes in the lungs, epinephrine electrophoresis is alternated with calcium electrophoresis on the chest area. The location of the electrodes is bilateral (on the posterior-lateral surfaces of the chest) or anterior-posterior, in which one electrode is placed under the right clavicle, and the second is placed behind, below the left shoulder blade, so that the heart and vascular bundle are not under the direct action of direct current

Bromine electrophoresis is recommended for patients with increased excitability, poor sleep, children in whom psychogenic factors are of great importance in the development of an exacerbation of the disease. The impact is carried out according to the general method. Treatment has a calming effect, increases the duration of the non-attack period of the disease.

General iodine electrophoresis sometimes has a beneficial effect in patients in the initial period of bronchial asthma, contributing to the thinning and removal of sputum, the effect of iodine on a number of physiological functions of the body, in particular on the function of the thyroid gland, on metabolic processes is not excluded. It should be remembered that bromine and iodine themselves can cause sensitization.

Material and Methods. Some authors recommend electrophoresis of novocaine (2% solution), it is possible together with a solution of diphenhydramine (0.1%) according to the nasal method. Novocaine helps to reduce pathological irritation of nerve receptors, eliminates bronchospasm, which explains the positive effect on patients with bronchial asthma.

V.N. Gromova recommends the use of magnesium electrophoresis according to the method of general exposure with a 5-10% solution of magnesium sulfate to correct hypomagnesemia, and also taking into account the sedative, antihistamine effect of magnesium preparations, their stimulating effect on adrenal function[1].

Methods of high-frequency electrotherapy - UHF electric field, inductothermy are also used in the complex treatment of allergic diseases, especially often in respiratory diseases in children.

The method of UHF therapy lies in the fact that the upper body of the child is moved to an alternating electric field between two insulated electrodes. Under the influence of alternating current, ions and dipole protein molecules oscillate, as a result of which heat is generated, electrochemical processes occurring in tissues change.

The most sensitive to the action of UHF currents is the neurovascular system. At small doses of current, a calming and analgesic effect develops, blood vessels dilate and blood flow accelerates, redox processes and tissue regeneration increase, which determines the therapeutic effect.

For the treatment of children, low-power UHF devices (40 and 80 watts) are used: electrodes are placed transversely on both sides of the chest along the posterior axillary line, with an air gap of 1-1.5 cm, the duration of the procedure is 5-10 minutes, daily or every other day: for a course of treatment 8-10-12 procedures.

Inductothermy is the effect on the body of a high-frequency alternating electromagnetic field that occurs in the patient's body, especially in tissues with high electrical conductivity (blood, lymph, muscles, parenchymal organs), induction eddy currents, which lead to the formation of heat in tissues, increased blood supply, change the course physiological processes.

For inductothermy, the DKV-2 and IKV-4 devices are used, the exposure is usually carried out using an applicator disk, in which a coiled cable is enclosed. The applicator is set parallel to the surface of the body at a distance of 1 cm. The duration of the procedure is 10-15 minutes, daily or every other day; for a course of treatment 10-15 procedures. After the procedure, the patient should rest in a warm room for 20-30 minutes.

The absence of direct contact of the applicator with the body of the child and any discomfort, carrying out procedures in clothes, the depth of tissue heating determines the advantages of this method in children. A relative disadvantage of the DKV-1 apparatus is the large size of the disk, so inductothermy (or as it is incorrectly called short-wave diathermy) can only be prescribed to children over 5 years old.

Recently, an eddy current electrode (EVT-1) with a diameter of 9 or 6 cm has appeared, which made it possible to use the inductothermy method in young children (from 2-3 years of age). The electrode is fed from the UHF-62 apparatus.

Discussion. The expediency of using inductothermy (EVT-1) on the area of the adrenal glands in order to stimulate their function, especially in children receiving hormonal treatment, has been shown. A.M.Godovich's studies have shown a beneficial effect of inductothermia on the course of bronchial asthma, skin manifestations of exudative diathesis in children of the first years of life and on an increase in the functional activity of the adrenal cortex, especially in children receiving hormones.

Inductothermia of the adrenal region is carried out in the post-attack period of the disease, with incomplete relief of an asthma attack, with asthmatic bronchitis. The inductor (EVT-1) is located on the back at the level of DC-DX/ with an air gap of 1 cm, exposure 10-15 minutes; for a course of treatment 12-15 procedures every other day.

In the complex treatment of bronchial asthma, physiotherapy exercises are of particular importance. In the occurrence and course of allergic diseases, disorders of the central nervous system and its autonomic department play an important role. Therefore, in the complex treatment of these diseases, an important place should be occupied by the effect on the central nervous system. G.N. Speransky believed that one of the most important methods of treatment is the strengthening of regulatory mechanisms by training them with physiological stimuli: mild hardening procedures and physical exercises[1]. Others report on the great importance of physical therapy in the complex treatment of bronchial asthma in children and adults. In recent years, an increasing number of foreign authors have turned to questions about the significant role of exercise therapy in the treatment of bronchial asthma

With this allergic disease, significant disturbances in external respiration are observed; with a long course of the disease, chest deformity appears, emphysema develops, and when combined with chronic pneumonia, pneumofibrosis also develops. Therapeutic gymnastics is the most important, if not the only, means for restoring impaired breathing.

SM Ivanov, who devoted many years of observation and research to the treatment of bronchial asthma with physiotherapy exercises, believes that this method influences the central nervous system and its reflex mechanisms. As a result, there is a gradual normalization of the functions of the higher parts of the central nervous system, the normalization of cortico-visceral relationships[2]. The optimal state of the nervous system, created when performing physical exercises, while improving the consistency in the activity of the main systems of the body, prevents the possibility of allergic reactions, leading to a certain degree of non-specific desensitization. An increase in the function of the adrenal glands during exercise therapy also restores the normal function of breathing, prevents the development of emphysema and other disorders in the respiratory system. Of great importance is the restoration of nasal breathing through learning, which remains difficult even after surgery for adenoids and polyps. Physiotherapy exercises prevent and eliminate the already developed deformity of the chest and spine. In addition, we must not forget that even in young children, the frequency and severity of asthma attacks are dependent on a variety of emotional factors. With properly conducted classes with children, an improvement in the neuropsychic state of patients is also observed.

Carrying out physiotherapy exercises in children of the first years of life is limited to individual passive gymnastics and massage. Starting from 2-3 years old, it is possible to use exercises of a playful nature - inflating rubber toys, exhaling through tubes, blowing soap bubbles, etc., as well as sound exercises - modification of sound complexes recommended by[3]. These complexes can be prescribed to children completely at the age of 4 years. Classes are best done with small groups of 3-4 children, and sometimes individually. During the stay in the clinic, it is necessary to teach mothers the basic techniques of massage and physiotherapy exercises so that classes continue, and at home for a long time.

After 4 years, classes can also be held in groups that are somewhat larger in number of people (4-6); 2-3 times a week, classes are held in the institution, preferably with musical accompaniment. Cheerful, clear command, elements of the competition contribute to raising the emotional tone, distract children from painful experiences and give them joy[4]. A child who is not distracted by anything from the disease, except for books and sedentary games, becomes a pessimist, "goes into his illness" and is afraid of active movements. If it is possible to overcome the fear of movements, which is easier to achieve in a clinic, a sanatorium, in a forest school, then with the right approach, with a gradual load, the complexes are complicated, imitations of sports movements are introduced into them, then you can move on to some of its types.

One of the most important types of muscular activity is walking in a rhythm learned by truancy in class, which can be used at any time of the year. Grabar especially recommends walking before going to bed[5].

An excellent breathing exercise is swimming, especially the breaststroke style, which is more profitable to start in groups in outdoor pools for therapeutic and then sports swimming. Swimming is a great way to ease breathing for asthma sufferers, as the pressure of the water on the chest makes it difficult to inhale and makes it easier to exhale. Senior students can also engage in rowing. In winter, the best kind of therapeutic sport is skating with a high seat, as in figure (but not sports) skating. A stronger load is skiing.

Mention should also be made of classes in choreographic circles, where classes are held in lightweight clothes in large, well-ventilated halls, which contributes to hardening. Rhythmic movements to music are beneficial, affect children, increasing their emotional tone. The choreography uses breathing exercises aimed at improving the function of the diaphragm and training abdominal breathing, which relieves spasm of the respiratory muscles.

At school, children with asthma can engage in regular physical education only under certain conditions (well-ventilated rooms, etc.) with mandatory individualization of the load.

Systematic physiotherapy exercises reduce the frequency of asthma attacks and intercurrent diseases, increase the general and emotional tone, improve the shape of the chest, and with systematic complex treatment contribute to the recovery of the patient. The earlier physical therapy is included in complex treatment, the better the prognosis.

Climatotherapy for allergic diseases in children has a great influence on the regulatory systems of the body. First of all, you should use the local possibilities of climatotherapy (in the broad sense of the word) for hardening.

This literature and the practical experience of doctors show that climatotherapy and hardening can be organized in any climatic zone, but the methods of aeroheliotherapy should change in relation to local weather conditions, as well as depending on the age of children, the clinical manifestations of allergies, the stage of the disease, the degree of fitness of the body. child to changing environmental conditions.

In the middle and northern geographical latitudes, aerotherapy is mandatory. The very stay in the fresh air stimulates the vital functions of the body, improves the course of redox processes. In a child who is not accustomed to prolonged exposure to air in cool or cold weather, they begin with a dosed short-term (20-30 minutes) walk in the air several times a day, gradually increasing to 2-4-6 hours with a break. It is useful to stay on special equipped verandas, where a dosed change in temperature is possible. Be aware of the increased sensitivity of children with allergies to cold, which can exacerbate, especially in bronchial-pulmonary allergies. Aerotherapy is also used in the form of air baths, both indoors and outdoors, depending on the season and ambient temperature. G.N. Speransky recommended starting air baths from the age of 3 months1.

Special studies have shown that systematic hardening reduces the pathological condition of the mucous membranes of the respiratory tract, tones up the nervous system, stimulates the activity of the sympathetic-adrenal system and reduces the incidence of children[6].

Water procedures - rubdowns, douches, showers, bathing - have a stronger hardening effect than air baths. The physiological effect on the body is determined by temperature, mechanical effects on the exteroreceptors of the skin, reflexively changing the functions of many organs and systems. With the systematic use of cold stimuli, thermoregulation improves, resistance to sharp fluctuations in external temperature increases.

According to the observations of G.N. 22 degrees.

One of the active types of climate therapy is sunbathing, but in children with allergies, they should be used with great care due to the high pathological reactivity and the possibility of photosensitivity.

Climatotherapy in the narrow sense - changing the place of residence to another climatic zone - is especially recommended for bronchial asthma. There is no consensus in the literature on this issue, and there cannot be.

The patient's response to climate change may be unexpected. Acclimatization even in healthy people is a complex process, and in sick children it can be difficult. It should be remembered about the age characteristics of the child's body: adaptation to a new climate, especially with a sharp change (north to south, wet to dry vice versa), is slower and is not always feasible for a small child weakened by an illness. But sometimes, if it is not possible to achieve sufficient success in local conditions or the climate is too harsh, abounding in rains, fogs, etc., a sick child needs to create other climatic conditions. In such cases, resort treatment with temporary stays in sanatorium conditions of a different climate should be recommended. In the conditions of a specialized sanatorium, there are more opportunities to achieve a complete restoration of the functional state of the nervous system, respiratory organs and conduct hyposensitization under the supervision of a specialist doctor.

According to the literature, climatotherapy of bronchial asthma can be carried out in various climatic conditions. But most of all supporters of the high-mountain climate. Even Klevitz and Storm van Leeven pointed out that in high mountain climates the air is completely free of pollen allergens. Domestic pediatricians from Georgia report a good effect in children with bronchial-pulmonary allergy[7]. The clearly positive influence of the high-mountain climate is due to many reasons. Mountain climatic conditions are characterized by dryness, transparency and purity of the air, the absence of fogs, high heat in summer and sharp cold in winter, and slight fluctuations in the average monthly temperature. The mountain climate is also characterized by meteorological features that cause a tonic and irritant effect - low atmospheric pressure with a low partial pressure of oxygen[8], a large temperature difference in the shade and in the sun, abundant insolation, rich in active ultraviolet rays, high air ionization. According to P.K. Bulatov and others, many of these factors are present in an artificial pressure chamber. It is these last indicated conditions that contribute to the improvement of respiratory function (deepening of breathing, increasing the vital capacity of the lungs).

The low partial pressure of oxygen is a specific factor in the high mountain climate. Already at an altitude of 1000 m, hemoglobin saturation with oxygen is 94%, the number of red blood cells increases. The influence of the high-mountain climate on the tone of the autonomic and endocrine systems (hypothalamus, pituitary and adrenal glands) causes stimulation of the adrenal glands which in turn leads to a decrease in sensitivity to bacterial allergens. Treatment at

mountain climatic resorts is possible all year round, but it is preferable from April to November, when sick children can spend most of the day outdoors and take walks.

A good effect on patients has a stay in the southern seaside resorts - the coast of the Crimea, the Sea of Odessa. Mild winters, warm dry summers, relatively low humidity, an abundance of solar radiation[9], a favorable wind regime that brings clean air saturated with particles of sea salts and free from urban and domestic allergens - all this has a beneficial effect on the state of the nervous system, respiratory organs and contributes to body desensitization. However, for some children, especially northerners with increased nervous excitability, the process of acclimatization can be long and difficult, as well as reacclimatization when returning from a resort to the conditions of the north.

The seaside climate of the Caucasian coast (south of Anapa) is contraindicated for children with bronchial asthma. The also confirms that in children sent to Abkhazian sanatoriums, bronchial asthma often occurs in severe form. Apparently, the high humidity of the air in this area matters here. The sea air of the Baltic Sea with a high content of iodine, rapid temperature changes during the day by 0.5-2 degrees is important for reducing the frequency of catarrhs of the upper respiratory tract, i.e., it has a hardening effect.

Conclusion. In short, asthma and bronchial and allergic diseases in children are more likely to be aggravated by the negative effects of the environment. In the prevention of this, in the treatment of children, the creation of a clean ecological environment and regular physical exercise, important results are achieved in the treatment of diseases. It has been proven in experiments that the treatment of children through natural methods is more effective and more useful than drugs and chemical methods.

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