

Peloid therapy in the complex of rehabilitation treatment in children with pathology
respiratory organs

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Pelotherapy in complex rehabilitation of children with respiratory pathology

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RESUME

Children with respiratory pathology in the majority of patients in the course of restorative treatment in the sanatorium. Preferential and selective approach in choosing pelotherapy with silt, mud or peat with clay determines the level of effectiveness of the treatment load. The effectiveness of complex of regenerative therapy, and superior results glinolecheniya treatment with the inclusion of children with abnormal pelotherapy breathing.

Keywords: children, rehabilitation, complex, peloids, mud.

SUMMARY

Children with respiratory pathology make up the majority of patients in the course of rehabilitation treatment in a sanatorium. The preferential and selective approach when choosing peloid therapy with silt and peat mud or clay determines the level of effectiveness of the performed therapeutic load. The effectiveness of the complex of rehabilitation therapy and clay therapy exceeds the results of the course of treatment with the inclusion of peloid therapy for children with respiratory pathology.

Key words: children, pathology of the respiratory system, restorative treatment, a set of measures, peloidotherapy, argillotherapy.

Introduction

Respiratory diseases in children are always in the center of attention of pediatricians, and, above all, because of the high incidence of morbidity. It would not be a big exaggeration to say that out of every three children who go to the doctor, two present some kind of respiratory complaints. Among the severe forms of various pathologies of childhood, respiratory diseases play an important role [1].

Treatment of acute and chronic diseases of the respiratory system is based on the use of a whole arsenal of drugs, which does not guarantee periods of stable remission. Drug therapy affects the quality of life of the child, and long-term use of drugs often causes side effects, being the reason for cancellation. At the same time, physiotherapy methods have a wide range of therapeutic effects, the absence of allergic

reactions and drug dependence, are non-invasive, have a minimum of side effects, and can also improve the functional state of organs and systems [2].

An integrated approach to the choice of the method and scheme of restorative treatment allows the most optimal observance of the unity of the etiotropic, pathogenetic and symptomatic approach in the treatment of a number of diseases of the respiratory system. Rehabilitation treatment in a sanatorium is carried out, first of all, using natural physical factors: climate, mineral water, mud, etc. [3].

Mud therapy (peloid therapy) is used in the treatment of respiratory diseases, where the rational inclusion of mud procedures potentiates the action of drugs, inhibits the progression of the disease and stimulates the development of reparative processes. For many decades of use, the medicinal properties of peloids have been thoroughly studied, as well as their physicochemical properties are known. The general laws of the therapeutic action, independent of the specificity of the conditions of origin of various types of peloids, have also been determined. At present, none of the modern drugs can be compared with peloid in their spectrum of action, which opens up the broadest possibilities of their therapeutic use [4].

Clays are an indispensable component of all types of peloids, and the mineral-structural composition of clays is in many respects identical to silt and peat mud. The most valuable balneotherapeutic parameters such as plasticity, heat capacity and heat-holding capacity, relative chemical inertness, fine particle size distribution are similar or superior to these indicators in peloids [5, 6]. The Voronezh region possesses vast reserves of clay, and the largest gray clay deposit located close to the city limits is located in Latnoe, Semiluksky district, Voronezh region. This mineral raw material belongs to montmorillonite (0.20%) and kaolinite type (90–100%) [7].

Clay therapy (argillotherapy) is a method of thermotherapy for a wide range of diseases using clay, the mechanism of physiological action is similar to the action of mud procedures. Providing a pronounced reflex irritation of the differentiated nerve endings located in the skin, the signal is transmitted through the neuro-reflex pathways to the central apparatus of the spinal cord and brain, where it receives the necessary impulses of physiological restructuring through feedback.

A comparative analysis of the effectiveness of a complex of rehabilitation treatment for children with respiratory pathology with the inclusion of peloid therapy based on silt, peat mud and argillotherapy in a sanatorium was determined by the purpose of this work.

Research object and methods

To achieve this goal, a comparative analysis of the results of rehabilitation treatment in a local health resort was carried out for 78 children with respiratory diseases. In an open way, in observation,

participation of 29 boys and 49 girls (average age 12.8 ± 1.65). The main selection criterion was determined by the leading disease of the respiratory system (J30-J47; ICD-10, 2006):

- chronic rhinitis, nasopharyngitis, tonsillitis - in 57 children (73.1%);
- recurrent bronchitis - in 13 children (16.6%);
- allergic bronchial asthma (household, food sensitization), moderate severity, persistent, controlled - in 8 children (10.3%).

The duration of the underlying disease varied from 2 to 4 years (63.7%). Almost every child had a background diagnosis, while 53 children (67.9%) had two, less often three concomitant diseases ($p < 0.05$). An additional focus of chronic infection of ENT organs was recorded in adolescent girls (32.1% of cases). Pathology of the musculoskeletal system: impaired posture or scoliotic disease of the spine was noted among adolescents aged 12–16 years. Diseases of the digestive system, asthenic disorders and pathology of the organs of the cardiovascular system were present in equal proportions. During the initial examination of the children, a clarifying history of the child's development, medical history and complaints were collected.

By the method of simple randomization, four clinically comparable groups were formed cohort and prospectively. Three groups of 20 people were identified as observation groups and 18 children were included in the comparison group.

The complex of rehabilitation treatment in the sanatorium included a dosed prescription of 7 to 9 procedures using four to five methods: climatotherapy (I-II motor mode); hydrotherapy (pearl / honey / pine baths or circular / rain showers); a complex of therapeutic exercises and a course of chest massage; inhalation and intake (inside) of chloride-sulfate mineral water (average salinity 2.6-3.5 g / l).

For 20 children of the first group, the complex of therapeutic measures was supplemented with mud procedures with medium-mineralized silt-sulfide peloids of the seaside type (the Kizil-Tash lake deposit, the Anapa resort, Krasnodar Territory) [8].

For 20 children of the second group, mud procedures with low-mineralized freshwater sulfide-free peat ("Dvurechye-Esaulovo" deposit, Gryazinsky district, Lipetsk region) were added to the complex of therapeutic measures [9].

For 20 children of the third group, the complex of rehabilitation therapy included procedures based on sulfur clay (deposit in Latnoe, Semiluksky district, Voronezh region).

The results of tests at the Federal State Institution "Center for Sanitary and Epidemiological Supervision" (Voronezh, 2003) and at the Federal State Institution "RNTSVMiK" (Moscow, 2005) testified to the safety of sulfur clay. In the "Balneological conclusion" the list of indications includes respiratory diseases. Indications for the appointment and methods of performing peloid therapy are described by many authors and are well known [8, 9]. The procedures were performed according to the "local compresses" technique (a layer of mud / clay 1.5–2 cm), exposure time 12–18 min. at 38–42 ° C, every other day, taking into account individual indications for pathology of the respiratory system: on the submandibular region, the paranasal sinuses, interscapular region or thoracic

cage.

Before and after the course of treatment in a sanatorium, the results of anthropometry of children (correspondence of weight to body length), the nature and number of complaints, indicators of clinical blood analysis and humoral immunity were assessed: Ig A, M, G (according to generally accepted methods).

Leading pediatric scientists, including A.A. Baranov (2007), L.S. Baleva (2008), repeatedly emphasized that the most complete idea of the degree of impairment of body functions and the effectiveness of rehabilitation measures is provided by the methods for assessing the functional reserves of the child's body, based on the principles of non-invasive research and predominantly screening programs [10, 11]. We used a special method for testing the level of physiological and somatic health, functional and adaptive reserves of the child's body, based on the analysis of the functional state by physiological indicators from reflex zones by the method of segmental electropunctural neurodiagnostics using the KES-01 hardware and software complex in the screening diagnostic mode ... (Registration certificate No. 29/23020600 / 1279-00 dated 04.12. 2000), (MCKT "Avicenna" St. Petersburg) [12]. The method is certified for compliance with safety requirements (Certificate of Conformity No. ROSS Ru. ME 03.V 05933; No. 4766394).

The immediate results of treatment were assessed according to the criteria of the effectiveness of spa treatment: improvement, no positive effect, deterioration (TsNIIKiF, 1978) [13].

The normal distribution of quantitative ones was checked using the signs Kolmogorov-Smirnov test. When testing statistical hypotheses, the presence of statistical significance was determined at $p < 0.05$. Software: statistical analysis package "SPSS-13" for Windows from SPSS Inc.

Results and discussion

At the time of admission to the sanatorium, a third of the children (41.3%) complained of a runny nose and a sore throat, and half of them were worried about a superficial mixed cough (24.1%). Examination of the nasopharyngeal organs showed moderate hyperemia of the visible mucous membranes of the pharynx and difficulty in nasal breathing. Some children were worried about headaches (22.4%) and increased fatigue (15.5%).

According to regional standards, the results of anthropometry (correspondence of weight to body length) indicated the absence of significant and significant deviations in the physical development of most children [14].

Moderate deviations from the physiological norm in the level of monocytes, segmented granulocytes and lymphocytes (from 14.1 to 44.8% of cases) were recorded in the clinical blood test of children before the start of treatment. An increased content of leukocytes, stab neutrophils, ESR (from 1.7 to 6.8% of cases) was revealed in children with signs of a sluggish inflammatory process in the nasopharynx. Eosinophilia (10-28%), decreased numbers of hemoglobin (93-112 g / l) and erythrocytes ($3.1-3.6 \times 10^6 / l$) were probably signs

allergic inflammation. Dysfunction of the humoral link of immunity was characterized by an increase in the level of IgM in 18 children (23%). Initial values of IgA and IgG levels had multidirectional changes - decreased in 42 children (46.2% and 20.5%, respectively) and increased in 27 children (12.8 and 21.8%, respectively). Individual scatter of immunological parameters, apparently, characterizes the functional state of individual links of the immune system.

The results of computerized electro-acupuncture scanning by the method of computer neurodiagnostics using the KES-01 complex were regarded as signs of functional disorders of the digestive, endocrine, urinary, immune, cardiovascular, respiratory systems and neuropsychological status. According to the results of computer testing, the leading pathology of the respiratory system (rhinopharyngitis, bronchitis) was confirmed in 62 children (79.5%). Additionally, signs of functional disorders of the digestive system (gastritis, dyskinesia of the biliary system or intestines, dysfunction of the pancreas) and organs of the endocrine system (endocrinopathy) were recorded - 75 people (96.2%). Signs of functional disorders of the urinary system (urinary bladder hypertonicity) were found in 67 children (85.9%). Signs of functional disorders of the cardiovascular system (myocardopathy) and neuropsychological status (asthenic syndrome, encephalopathy, cephalgic syndrome) - in 28 children (35.9%). Thus, from five to six signs of functional disorders were identified in one child, which, in fact, corresponds to the data of E.F. Seleznev, indicating that, on average, one adolescent child has from 5 to 7 diseases and / or functional disorders [15].

All observed children tolerated the procedures well, and in none of the cases there was an exacerbation or deterioration. The complex of restorative therapy with the inclusion of peloid therapy with sulphide silts had a positive effect on the general well-being of children. There were isolated complaints of a runny nose, cough (from 7 to 1 case) and sore throat (from 12 to 2 cases), $p < 0.002$. There was a correction of the psychoemotional state of children: sleep and mood improved, headaches disappeared (from 7 to 1 case), $p < 0.05$. The body weight of children has increased by an average of $+ 0.245 (\pm 0.86)$, $p < 0.05$. The number of initially changed indicators of the clinical blood test decreased: the content of leukocytes from 5.46 ± 0.2 to 4.56 ± 0.16 and segmented neutrophils from 34.2 ± 1.54 to 45.06 ± 2.31 , ($p < 0.05$). The frequency of lymphocytosis decreased from 55 to 15% of cases. A tendency towards some leveling of the levels of Ig A (from 65 to 50% of cases) and Ig G (from 40 to 15% of cases) was revealed. The IgM concentration decreased from 1.36 ± 0.05 to 1.14 ± 0.04 , ($p < 0.05$). The decrease in the frequency of detecting deviated from the normal level of IgA and IgG indicators, probably, characterized the variety of adaptation to the proposed load. The results of computer scanning by the neurodiagnostic method showed a decrease in the number of signs of functional disorders in all studied functional systems by 24% and significantly - neuropsychological status (from 14 to 4),

After a course of rehabilitation treatment and peloid therapy with peats, a positive dynamics of the general condition and well-being of children was noted. Most of them noted the disappearance or reduction of the common cold (from 7 to 2 cases), cough and sore throat (from 6 to 1 case), $p < 0.05$. The improvement in mood and general well-being, appetite was also confirmed by the increase in body weight from the primary data by an average of $+0.192 (\pm 0.78)$, $p < 0.05$. The alignment of most of the initially changed indicators of the clinical analysis of blood and their approximation to the norm was observed. The frequency of segmented neutropenia decreased (from 35 to 20% of cases), and lymphocytopenia (from 45% to 15% of cases) was transformed into lymphocytosis. Against the background of the preserved frequency, differently changed IgA values (50% of cases), there was a tendency towards a decrease in the initially elevated level of IgM and IgG (from 55% to 20% of cases), $p > 0.05$. According to the data of functional examination by the method of computer scanning, a decrease in the number of signs of functional disorders of the digestive system by 12% was found, including a significant decrease in the number of signs of disorders of the neuropsychological status (from 12 to 6 cases), $p < 0.05$.

The complex of rehabilitation therapy in combination with clay therapy had a positive effect. The number of complaints of cough, sore throat (from 6 to 1 case) and runny nose (from 12 to 3 cases) decreased, $p < 0.002$. By the time of departure from the sanatorium, an increase in the body weight of children was recorded on average by $+0.205 (\pm 0.100)$, $p < 0.05$. Most of the indicators of clinical blood tests were within the age norm. In the dynamics, the content of monocytes significantly changed from $4.08 \pm 0.86\%$ to $6.74 \pm 0.61\%$ and the ESR value from 4.17 ± 0.55 mm / h to 7.31 ± 0.54 mm / h, ($p < 0.05$), probably as a manifestation of immune reactivity. The parameters of immunoglobulins in dynamics were characterized by a decrease in the frequency of IgA and IgG levels changed from age values. The IgM concentration decreased from 1.31 ± 0.1 mg / L to 1.14 ± 0.04 mg / L, ($p < 0.05$). An increase in the detection rate of high IgG levels in combination with IgA deficiency indicates a normal course of adaptation processes during treatment. The results of computer scanning by the neurodiagnostic method confirmed a decrease in the number of signs of functional disorders of the digestive, endocrine, cardiovascular, respiratory systems and a slight increase in the urinary system, indicating that clay therapy has a pronounced multi-stage mechanism of action.

The complex of rehabilitation treatment without the inclusion of peloid and clay therapy in the children of the comparison group had a positive effect, but nevertheless the majority of children still had complaints of a runny nose, cough and sore throat (from 6 to 5 cases). Anthropometric data reflect the weight gain of children on average by $+0.124 (\pm 0.56)$, $p < 0.05$. Most of the indicators of the clinical analysis of the blood of children were within the physiological norm, but no statistically significant changes were found. There was no significant change in the level of serum immunoglobulins IgA and IgG in comparison with the indicators before therapy. There was a slight increase in the increased values of the IgM level. The results of the repeated examination using the neurodiagnostic method showed a decrease in the number of

signs of functional disorders of the digestive, urinary, endocrine systems by 7.2%. Along with this, there was an increase in the number of signs of functional disorders of the cardiovascular system (from 9 to 11 cases) and, most of all, signs of changes in the respiratory system (from 11 to 19), which actually manifested itself as clinical symptoms.

During the observation, the therapeutic efficacy of treating children with respiratory diseases was confirmed by the dynamics of clinical and diagnostic tests. When the procedures with silt peloids were included in the complex of rehabilitation therapy, it was 85%, with the addition of procedures with peat mud and procedures with sulfur clay - 80% each. The complex of rehabilitation treatment without the inclusion of mud procedures was effective in 77.7% of cases.

It should be noted that the inclusion of procedures based on various peloids and clay into the complex of rehabilitation therapy had a different level of significant changes. Thus, in the group of children who received sulfur clay-based procedures in the complex of rehabilitation treatment, regression of most clinical signs, indicators of peripheral blood and humoral immunity was significantly and statistically significant. Slightly less significant changes occurred when mud procedures with sulphide silts were included in the main complex of treatment, while when pelotherapy with peat was added and after a complex of rehabilitation measures without the appointment of mud and clay procedures, significant changes were similar and minimal.

conclusions

Thus, in the conditions of a sanatorium, it is necessary to take a differentiated approach to prescribing peloid therapy in the complex of rehabilitation treatment for children with diseases of the respiratory system. In order to increase the efficiency of rehabilitation treatment for pediatric patients with respiratory pathology, it is recommended to purchase silt sulfide peloids. It is important to emphasize that in the conditions of local health resorts, in the course of restorative treatment measures, it is possible to apply the method of argillotherapy based on gray clay from the Latnoe deposit, Semiluksky district, Voronezh region.

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