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TÍTULO: Uso efectivo del método de hipoterapia en la rehabilitación compleja de niños con parálisis cerebral.

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RESUMEN: El síntoma patológico más común en el cuadro clínico de ISP es la espasticidad generalizada o local, que conduce a la formación de estereotipos patológicos posturales y motores, y deformidades musculoesqueléticas secundarias. Los niños con funciones motoras deterioradas pronunciadas están aislados de la sociedad, no pueden moverse libremente, tienen movilidad limitada; por lo tanto, su espacio vital está limitado principalmente por las paredes del espacio vital. Después de la rehabilitación en el centro «Rostok» en el territorio Trans-Baikal con el uso de hipoterapia en niños discapacitados con parálisis cerebral, hay una remisión persistente de la enfermedad, una mejora en las funciones estatodinámicas, lo que permite reducir la dosis de medicación de mantenimiento.

PALABRAS CLAVES: parálisis cerebral, hipoterapia, rehabilitación, caballo, persona discapacitada.

TITLE: Effective use of the hippotherapy method in the complex rehabilitation of children with cerebral palsy.

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ABSTRACT: The most common pathological symptom in the clinical picture of ISP is generalized or local spasticity, leading to the formation of pathological postural and motor stereotypes and secondary musculoskeletal deformities. Children with pronounced impaired motor functions are isolated from society, are not able to move freely, are limited in mobility; therefore, their living space is limited mainly by the walls of the living space. After rehabilitation at the «Rostok» center in the Trans-Baikal Territory with the use of hippotherapy in disabled children with cerebral palsy, there is a persistent remission of the disease, an improvement in statodynamic functions, which makes it possible to reduce the dosage of maintenance medication.

KEY WORDS: cerebral palsy, hippotherapy, rehabilitation, horse, disabled person.

INTRODUCTION.

Nowadays, the introduction of such a concept as “health-related quality of life” has become relevant. Full person’s potential realization, both personal and social, depends on the feeling of a quality life [5].

Currently, the number of disabled people in Russia is more than 5 million, of which 1 million 800 thousand are children with disabilities. In the Trans-Baikal Territory, there are more than 100 thousand disabled people, among them children with disabilities make up 5 thousand people, and in the city of Chita there are approximately 1.2 thousand children with disabilities [4].

DEVELOPMENT.

The purpose of our study is to prove the real possibilities for the rehabilitation of children with cerebral palsy (ICP) on the basis of hippotherapy, as one of the basic methods of comprehensive rehabilitation in medical and social rehabilitation centers of the Trans-Baikal Territory.

According to the Bureau of Medical and Social Expertise (MSE), the level of disability due to cerebral palsy in the Trans-Baikal Territory exceeds that one in the Russian Federation and the Siberian Federal District. More than 84,000 services are rendered annually by specialists from the pathology department of the musculoskeletal system of the Rostock Center of Medical and Social Rehabilitation of the Disabled in the Transbaikal Territory and it is served up to 1,500 clients of different age categories. Advantage is given to children with cerebral palsy and injuries of the musculoskeletal system [5].

Within the framework of a complex rehabilitation, all children of this nosological group undergo a course of hippotherapy. The hippotherapy department has accumulated extensive experience in the use of therapeutic riding (TR) in the rehabilitation of children with disabilities with disorders of the musculoskeletal system. Hippotherapy is one of the forms of physical therapy that uses a very unusual “sports equipment” - a live horse [2, 3].

Like any other form of physiotherapy exercises, TR is a treatment with movement, which is a natural stimulant and regulator of its life.It contributes to the improvement of motor functions, and is also effective in spastic disorders in sick children with cerebral palsy [6,8,9,10]. The use of a horse in the process of rehabilitation sometimes does not have a clear distinction between the areas of activity - medicine, psychology, education, correctional disciplines and sports [1].

In our opinion, the course of two rehabilitation directions of hippotherapy does not mean a simple summation of two different areas of knowledge. From this combination on, something qualitatively new is born, a new research setup, a new point of view, technology integration, the possibility of a comprehensive impact on the patient, and this phenomenon explains the rapid growth in the popularity of hippotherapy [1,2].

Materials and methods.

Since 2009, in order to prevent disability, the Rostok Center has been enrolling groups of children at risk of developing disabilities for rehabilitation measures. Most of them are pupils of orphanages and social institutions. For 2014-2018, 556 disabled children underwent rehabilitation at the center, of which 41% (228 people) were children with a diagnosis of cerebral palsy.

In our research for the period 2014-2018, 186 children aged 8-12 years of both sexes with cerebral palsy, spastic double hemiplegia took part in the rehabilitation. The childrenunder study were divided into 2 equal groups of 93 children: control (group 1), average age - 10.5 ± 0.7 years and experimental (group 2), average age - 10.7 ± 0.5 years.

The study was carried out for 6 months. In the first group of children, rehabilitation measures consisted of classical massage and therapeutic exercises. The children of the second group were additionally engaged in an individual hippotherapy program. Each group of children was examined before and after completion of the rehabilitation course. In the groups, two courses of massage and therapeutic gymnastics were carried out, consisting of 15 procedures. The duration of the massage and gymnastics was 1.5 hours, with a break

of 10 minutes. Hippotherapy sessions, including 40 procedures were carried out for 6 months 3 times a week for 45 minutes

The effectiveness of the rehabilitation was investigated on the basis of a survey of specialists before and after the course of classes, a survey of parents and children, computer diagnostics "AMSAT" [2]. The latent time of the motor reaction (LTMR) (ms) was measured for light and sound using a universal myoreflexometer. For each study, 5 samples were carried out and the arithmetic mean value of the LTMR was calculated based on the results obtained.

The functional state of the nervous system in cerebral palsy was also determined — the maximum frequency of voluntary movements (tapping test).

Hand dynamometry (maximum hand strength in kg) was performed alternately on the right and left hand using a children's hand dynamometer. The obtained results of all studies were calculated on a personal computer. The main statistical parameters (M ± m) and the confidence factors of their differences were calculated by the non-parametric Wilcoxon T-criterion based on the standard computer program MS Excel. In addition, to register changes of the studied parameters, at the beginning of the rehabilitation course for each rehabilitant, a control card “Assessment of motor and mental characteristics” was instituted, in which the child’s condition was assessed using the point system before and after the rehabilitation course.

Results and discussions.

After completion of the rehabilitation course, the results were evaluated using a point system. In the absence of dynamics, 0 points were assigned.

As a rule, these were the patients who interrupted the course or the patients who suffered with a severe degree of motor impairment, complicated by concomitant diagnoses. There were 1 such children in the first group (1.86%), and in the second group - 2 people (3.72%). The positive dynamics of the results of rehabilitation was expressed in improving the general condition, which was estimated from

1 to 10 points. There were 67 such rehabilitants in the first group (36.02%) and in the second group 49 people (26.34%), since children with this nosology have significant motor impairments. 20 people (10.75%) in the first group and 29 people in the second group (15.59%) showed qualitative changes in the motor sphere and improved motor functions (from 11 to 20 points).

The safest rehabilitants showed significant improvements (more than 20 points) in the first group - 5 people (2.68%) and, accordingly, in the second group - 13 people (6.98%). They were expressed in the positive dynamics of motor capabilities within the initial level, in a significant improvement in walking function or a decrease in pathological symptoms (normalization of muscle tone, a decrease in the intensity of hyperkinesis, ataxia, the formation of the correct motor stereotype (kinetic step), and improvement of the emotional state) (Table 1).

Table 1. Comparative results of the state of children with cerebral palsy after a rehabilitation course.

Group of children with cerebral palsy	Withoutdynamics 0 points	General improvement 1-10 points	Function improvement 11-22 points	Significant function improvement over 20 points
1 group	1,86 % (1person)	36,02% (67people)	10,75% (20people)	2,68%(5people)
2group	3,72 % (2 people)	26,34% (49people)	15,59% (29 people)	6,98%(13people)

The monitoring allows us to make an objective qualitative assessment of the results of rehabilitation, taking into account the individual qualities of the patient (safety, age, motivation, family support).

After the rehabilitation course, in the 1st group of children with cerebral palsy LTMR to the light of the right and left hands it was decrease by 5.1 and 4.2%. Carrying out procedures using hippotherapy significantly changed the duration of the latent period of the motor reaction in children. Thus, after hippotherapy of LTMR, there was a decrease of 7.1 and 6.8%, respectively, to the light of the right and left hands, which is much better than in group 1.

When applying sound irritations, using classical massage and therapeutic exercises, the reaction time of the right and left hands in children was reduced, however, the data obtained were statistically unreliable. After carrying out procedures using hippotherapy, LTMR decreased by 7.8% in the right hand and 7.1% in the left.

In the next series of experiments, using the tapping test, we studied the maximum frequency of movements of children with cerebral palsy before and after the procedures. It was shown that the indicator of the maximum frequency of voluntary movements under the influence of procedures increased to a greater extent after the use of hippotherapy, which corresponds to the authors' data [7]. Thus, the frequency of voluntary movements of the right and left hands as a result of the use of hippotherapy increased by 13.2% and 12.3%, respectively, and after classical massage and therapeutic exercises, the obtained data were statistically unreliable.

Hand dynamometry after a rehabilitation course using hippotherapy also defined the greatest positive changes in the increase of the strength of the both hands of children with cerebral palsy. So, the strength of the hand of the right and left hands, in the course of hippotherapy increased by 7.4% and 6.1%, respectively. A significant increase in the strength of the hands of children of the 1st group was not noted. These indicators were within the bound of error.

Thus, the use of hippotherapy among the disabled children with impaired function of the musculoskeletal system eliminates motor deficiency in conjunction with the socialization of the patient, which contributes to the maximum possible adaptation in society and the environment.

CONCLUSIONS.

In the program of complex medical and social rehabilitation, the use of hippotherapy as a means of rehabilitation is one of the key methods. Using this technology expands the possibilities of rehabilitation, has a positive effect on motility and spastic reactions of the body, improves communication skills.

This study analyzed the experience of many years in the application of hippotherapy technology and proved its effectiveness and the feasibility of including disabled children with injuries of the musculoskeletal system in the rehabilitation process.

The process of rehabilitation of children with cerebral palsy, with the inclusion of hippotherapy, is prolonged. At the same time, it should be noted that correction of disorders of the musculoskeletal system is not possible without observing the basic principles of the rehabilitation effect of therapeutic riding. Successful completion of the main stages of TR classes favorably affects the psycho-emotional sphere, the regulation of muscle tone and the acquisition of necessary motor skills as a result of interaction between a horse and a child with cerebral palsy.

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