UDC: 616.8-009.1-085.851.8: 613.955

POSSIBILITIES OF REHABILITATION MEASURES TO IMPROVE THE QUALITY OF LIFE OF CHILDREN WITH COMPLICATIONS OF BIRTH INJURIES OF THE CERVICAL SPINAL CORD AND SPINE

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Relevance. One of the important problems of modern pediatrics and child neurology is the problem of improving the quality of life (QOL) of children with natal spinal injury and optimizing rehabilitation measures, which occupies a special place in the structure of morbidity and disability of the child population. The medical concept of quality of life includes primarily those indicators that are related to the state of human health. The main categories on which the study of the medical aspects of quality of life is based stem from the components of the definition of health, which was given by WHO in 1948: “health is a state of complete physical, mental and social well-being and not simply the absence of disease or infirmity”. In pediatrics, very little attention is paid to the problem of studying quality of life, although awareness of the importance of determining it in children and adolescents has already come: “The introduction of quality of life and methods for its study into the apparatus of child ecology will allow a broader, more systematic approach to the problems of developing children’s health“.

The use of the QOL assessment method will make it possible to comprehensively solve a wide range of problems in children's healthcare in our country, among which we should note the high incidence of morbidity and disability, the increase in neuropsychiatric disorders and social maladaptation of school-age children (Volodin N.N., 2001; Novik A.A., 2008; Razumov A.N., 2009).

In the world, special attention is paid to a wide range of scientific research aimed at studying the modern approach to early rehabilitation of children and improving the quality of life with complications of birth injury of the cervical spinal cord and spine. Romanova L.A., et al. (2014) assessed the dynamics of the quality of life of school-age children with natal cervical spine injury (CSI) against the background of complex spa treatment including manual therapy. It turned out that the quality of life of school-age children before treatment was reduced on all scales. As a result of the course of rehabilitation measures using manual therapy, positive statistically significant dynamics of quality of life indicators were noted.

Should be noted that restorative treatment of natal spinal injury is a difficult, long-term process and not always effective. Many works have been devoted to the study of the morbidity and disability of children with natal spinal injury; however, there are not enough works covering the timing of rehabilitation, its methods, volume (intensity, frequency, duration), the role and

influence of the patient's physical and psychological characteristics, type of injury, cost-effectiveness and effectiveness of alternative methods. To fill the existing gaps in this pathology, we decided to cover the issues of optimizing rehabilitation measures in children with complications of birth injuries of the cervical spinal cord and spine, and evaluate their impact on the quality of life.

The purpose of this study was to examine the effectiveness of rehabilitation interventions to improve the quality of life of children with complications of birth injuries of the cervical spinal cord and spine of preschool children.

Research methods: the study used clinical neurological examination and results of the PODCI scale, neurofunctional (electroneuromyography - ENMG), neuroimaging (ultrasound examination - ultrasound of the cervical segments of the spinal cord).

The Pediatric Outcomes Data Collection Instrument (PODCI) was created to assess functional status, therapeutic needs, and post-treatment changes in children and adolescents aged 2 to 18 years with orthopedic problems. PODCI has three forms; parent form for children, parent and self-report forms for adolescents. The instrument includes 86 items assessing "upper limb and physical function", "transfer and basic mobility", "sports and physical function", "pain/comfort", "happiness", "general functioning" and "expectations from treatment domains".

Depending on the treatment, the patients were divided into two groups: the main group (n=16) - patients with COFBIOTCSCAS, who received standard therapy in combination with modeling of the musculoskeletal system using complex rehabilitation methods, namely electromyostimulation and kinesiotaping; comparison group (n=14) - patients with COFBIOTCSCAS who received basic standard therapy. The control group (n=32) consists of practically healthy children who underwent a medical examination at their place of residence in a family clinic.

Results and discussion. A comparative analysis by age criteria indicates that due to the launch of compensatory mechanisms for this pathology in children, this led to the formation of adaptation processes, which subjectively on the part of parents led to a higher assessment of the quality of life of their children. When the results for each domain were analyzed separately, both groups showed poor results in the domain that reflects hand activity among all domains. The somatic condition of children with COFBIOTCSCAS is of great importance, since it is known that such children are part of the group of frequently ill children (FIC) and have a unique neurological type.

We studied the dynamics of the basic mobility function and the transfer function in preschool children. The obtained data are presented in table No. 1.

Table 1

Dynamics of basic mobility function and transfer function in preschool children

	Main group		Comparison group	
	Before treatment (M±m)	After treatment (M±m)	Before treatment (M±m)	After treatment (M±m)
On average, over the last 12 months, how often did your child miss school (kindergarten, camp, etc.) because of his/her health?	46.87±5.03	92.18±2.99	43.58±3.71 *	62.08±3.71 ^°
How he / she looks?	51.56±2.76	84.37±3.12	52.75±6.25 *	79.16±5.17 ^°
His/her body?	56.25±4.26	92.18±2.99	54.5±5.75 *	75.0±5.33 ^°
What clothes or shoes can he/she wear?	59.37±3.86	92.18±2.99	61.5±6.52 *	76.67±5.61 ^°
His/her ability to do the same things as his/her friends	65.62±3.86	95.31±2.51	63.33±4.7 *	80.41±5.72 ^°
His/her overall health?	62.5±4.56	96.87±2.13	60.41±5.72 *	72.5±4.86 ^°
Has your child been feeling sick and tired?	56.25±3.6	92.18±2.99	54.16±4.16 *	70.83±4.16 ^°
Was your child full of good spirits and energy?	60.93±3.93	95.31±2.51	61.83±6.02 *	79.16±5.17 ^°
Has your child experienced any pain or discomfort during activities?	53.12±3.12	95.31±2.51	56.33±4.7 *	72.5±4.86 ^°

Note: * - reliability of data before and after treatment in the main group (* - P <0.05)

^ - reliability of data before and after treatment in the comparative group (^ - P <0.05)

° - significance of the difference after rehabilitation between the main and comparative groups (°- P <0.01)

It was found that before the treatment, children of both groups, on average over the last 12 months, equally often missed school (kindergarten, camp, etc.) due to illness. The treatment improved the children's condition, and they missed less classes. However, the effectiveness of treatment in the groups had a statistically significant difference. Thus, children of the main group who received special rehabilitation methods showed better indicators than children who received standard treatment (92.18±2.99 and 62.08±3.71, respectively).

To the question “what does your child look like?” - only half of the surveyed parents of both groups answered positively before the rehabilitation measures (51.56±2.76 and 52.75±6.25, respectively). Against the background of the ongoing treatment tactics, the percentage of parents indicating the positive impact of rehabilitation measures increased, especially in the group of children who received special measures (79.16±5.17 and 84.37±3.12, respectively).

A significant difference in the study groups was revealed when answering the question "his/her body?" Before rehabilitation measures, this indicator in both groups had equivalent figures. Treatment significantly improved this indicator, especially in the main group (92.18±2.99 and 75.0±5.33, respectively). As can be seen from the table, the indicators of the main group after treatment were significantly higher than in the comparison group.

It is known that children who have suffered a birth injury to the cervical spine and spinal cord not only have certain difficulties in dressing, but they cannot wear all kinds of clothes. Based on this, the next question was - what clothes or shoes can he/she wear? It turned out that special rehabilitation methods carried out for children of the main group significantly improve their quality of life than basic therapy. Thus, if this indicator in the children of the comparison group after treatment significantly increased - 76.67±5.61, in the children of the main group it came even closer to the physiological values (92.18±2.99).

Restoration of vital functions is important in the rehabilitation of children who have suffered trauma, especially birth trauma of the cervical spine and spinal cord. In this regard, the ability of such children to do the same as his/her friends is of great importance. It turned out that timely rehabilitation measures significantly improve the abilities of children. Thus, if this indicator in children of both groups was equally low before treatment, rehabilitation measures significantly improved the ability to do the same things as his/her friends. However, the scores in the children of the main group who received special exercises were much higher than those in the comparison group (95.31±2.51 and 80.41±5.72, respectively).

We found a more significant difference in the effectiveness of different correction methods in the domain: His/her health in general. This is evidenced by the data we obtained in the compared groups (96.87±2.13 in the main group and 72.5±4.86 in the comparison group.

To the question: Did your child feel sick and tired? – parents answered the same before rehabilitation measures - 56.25±3.6 and 54.16±4.16. Unlike the comparison group, the treatment contributed to a more significant improvement in the well-being of children in the main group (70.83±4.16 and 92.18±2.99, respectively).

Proof of the more effective influence of special rehabilitation methods was the domain: Was your child full of good spirits and energy? Thus, before treatment, this indicator was equally low in both groups. After special correction methods were carried out, a significantly larger number of parents answered this question positively (95.31±2.51). Whereas, mothers of children in the comparison group were not so optimistic (79.16±5.17).

We received interesting answers to the question: Did your child experience any pain or discomfort during his or her activities? Before treatment, children in both groups had a low rate.

Treatment, especially special treatment, contributed to an increase in this indicator - 95.31±2.51, versus - 72.5±4.86, in children of the comparison group.

In order to fully evaluate the rehabilitation measures taken, we also studied the dynamics of pain and comfort function in preschool children.

Table 2

Dynamics of pain and comfort functions in preschool children

	Main group		Comparison group	
	Before treatment (M±m)	After treatment (M±m)	Before treatment (M±m)	After treatment (M±m)
Is it easy or difficult for your child to make friends with children his/her age?	64.06±3.2	100	66.75±3.26 *	81.25±3.26 ^ °
How sick has your child been over the past week?	55.93±3.93	82.81±2.99	57.5±3.76 *	63.75±4.48 ^ °
During the past week, how much did pain interfere with your child's normal activities (including at home, outside the home, and at school)?	54.68±2.51	98.43±1.56	55.41±3.71 *	76.67±4.7 ^ °

Note: * - reliability of data before and after treatment in the main group (* - P <0.001)

^ - reliability of data before and after treatment in the comparative group (^ - P <0.05)

° - significance of the difference after rehabilitation between the main and comparative groups (° - P <0.01)

One of the important indicators of the effectiveness of treatment of children with spinal cord injuries is the study of the dynamics of pain and comfort function in preschool children. In this regard, we decided to indirectly evaluate the effectiveness of different rehabilitation methods based on parents' answers to the questions we asked. So, to the question: Is it easy or difficult for your child to make friends with children his/her age? – before treatment, parents' answers were not statistically different (64.06±3.2 and 66.75±3.26, respectively). After special rehabilitation measures were carried out, absolutely all parents of the main group answered positively to this question. Although statistically significant positive dynamics were obtained in the children of the comparison group, they were still lower than in the main group - 81.25±3.26.

The next question was, as noted in the table - How sick has your child been during the last week? This question is very important for assessing the reactivity of children, since it is known that children with neurological pathologies often suffer from respiratory pathology and their disease is severe. It was found that before treatment, the morbidity rates of children in both groups were not statistically different. The treatment had a positive effect on this indicator;

however, a larger number of mothers in the main group indicated a milder course of the disease than in the comparison group (82.81±2.99 and 63.75±4.48, respectively).

It is known that pain significantly impairs the quality of life not only in adults, but especially in children. In this regard, we decided to find out how much pain changes the health status of children who suffered damage to the spinal nervous system at birth at subsequent stages of life. To do this, we created the following question: During the past week, how much did pain interfere with your child's usual activities (including at home, outside the home, and at school)? It turned out that before the treatment in children of both groups, pain significantly interfered with their usual activities (54.68±2.51 and 55.41±3.71, respectively). The groups were equal, i.e. no statistically significant difference was found. Against the background of special treatment methods, the indicator improved almost twofold in children of the main group (98.43±1.56); in children of the comparison group, although an increase in work activity was noted, it was still lower than in the main group - 76.67 ±4.7.

Conclusion. Thus, the conducted studies showed that rehabilitation measures had a significant dynamic improvement in the functions of basic mobility and transfer function in preschool children, especially pronounced positive dynamics were noted in children of the main group. For all parameters, the indicators of children who received special treatment methods were significantly higher than those of children who received standard treatment. As a result of the course of rehabilitation measures, a positive statistically significant dynamics of quality of life indicators was noted.

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