

# Peripheral Nervous System Diseases in Children and Results of Complex Medical Rehabilitation (with Drug Ipigrix® )

Zakhidjon Ismailov N.<sup>1,2</sup>, Mirdjuraev Elbek M.<sup>2</sup>

<sup>1</sup>Republic Children's Rehabilitation Center with Diseases of Bearing Movable System, Tashkent, Uzbekistan

<sup>2</sup>Department of Neurorehabilitation, Center for the Development of Professional Qualification of Medical Workers, Tashkent, Uzbekistan

**Abstract** Determination of tactics for patient management in the subsequent period with traumatic damage to the peripheral nervous system in children, improvement of general rehabilitation measures, prevention of childhood disability determines the relevance of the study. **Purpose of the study.** To improve patients' condition childhood after diseases of the peripheral nervous system by improving complex rehabilitation measures using the drug Ipigrix. **Materials and methods research.** The rehabilitation process involved 100 children with PNT diseases aged from 3 to 18 years. All children were divided into 2 groups: main - 64, control - 36. In the main group, an improved rehabilitation method was used with the addition of standard treatment. In the control group, only the standard rehabilitation method was used. The main group used the program and mobile application we implemented (Rem-Ex). **Research results.** According to the data of the main group that used the developed rehabilitation complexes, the following changes occurred: motor disorders in 85.6±3.4% of children decreased on average ( $p<0.05$ ); in the main group, the ability to climb stairs to the first and second floors without the use of additional support (barrier, belt) increased by 25.7±6.0% ( $p<0.05$ ); lack of exercise tolerance was noted in 68.3±3.8% in the main group and 21.8±4.5% in the control group. In the main group, a statistically significant improvement was achieved in the form of pain reduction by 73.2±6.4% ( $p<0.05$ ), and dependence on NSAIDs decreased from 45.4±3.7% to 4.2±1.6% ( $p<0.05$ ). **Conclusions:** after complex physical and rehabilitation measures with the correct use of drugs, all indicators were explained by complete or partial restoration of afferent pathways. As a result, level-dependent walking from child-led groups was significantly reduced in all groups.

**Keywords** Peripheral nervous system, Social activity, Recovery, Treatment, Clinical assessment, Groups of patients

## 1. Relevance

A special place is occupied by childhood diseases of the neuromotor system, which are one of the causes of childhood disability [1,2]. Pediatric mononeuropathy of the legs ranks second in prevalence among diseases of the peripheral nervous system in children after traumatic nerve damage. Today, improving children's health and preventing childhood disability remains the most pressing problem [3]. All children were divided by gender, diagnosis and practical methods of rehabilitation. According to analysis, 6 boys aged 3 to 7 years, 4 girls, 3 boys aged 7 to 11 years, 25 girls, 6 boys aged 11 to 18 years, 5 girls were diagnosed with post-injection mononeuropathy. Many studies have been devoted to the diagnosis and treatment of traumatic injuries of the peripheral nervous system in children, but there is no sufficient information about the etiology, pathogenesis, treatment and rehabilitation

of post-injection (iatrogenic) injuries of the peripheral nervous system [4]. The system, clinical features of such injuries and ways to improve treatment and rehabilitation methods. In the pathogenesis of the disease, taking into account the combination of several factors - mechanical, neurotoxic and vascular, he identified the need for comprehensive therapeutic measures (Boziks V.G., Martyanov B.B., 2018). In addition, after the end of the treatment period, there is a need to properly organize comprehensive rehabilitation measures to improve the quality of life of patients, accelerate their recovery after the disease, and apply the necessary treatment and medications [5,6].

## 2. Purpose of the Study

To study and describe the effectiveness of complex rehabilitation of children with PNS diseases by including drugs like Ipigrix into the rehabilitation process.

### 3. Materials and Methods of Research

In the rehabilitation process took part 100 children from 3 to 18 years with PNS diseases. All children were divided in 2 groups: main group – 64 patients, and control group – 36 patients. Main group from standard treatment to an improved method of rehabilitation, add swelling with the applied one. A control group was carried out using only the standard rehabilitation method.

The scope of the study included: medical history, somatic and neurological examination, balance assessment (Standing Balance R, Bohannon Scale), assessment of impairment of quality of life on the Rankin scale, assessment of physical capabilities on the Rand scale., assessment of pain due to disease, assessment of pain using a visual analogue scale (VAS), assessment of the severity of asthenia (according to L.R. Krupp), assessment of motivators of perceived barriers to maintaining physical activity [7,8].

According to the neurological examination, statistically significant results were achieved: in  $57.3 \pm 4.0\%$  of children, leg tremors stopped ( $p < 0.05$ ); In the main group, the number of children without limitations in the functioning of the legs was  $61.6 \pm 5.8\%$  compared to the control group ( $21.8 \pm 3.4\%$ ,  $p < 0.05$ ). In the main group, the severity of muscle wasting (heel, calf) decreased by  $68.5 \pm 7.2\%$  ( $24.3 \pm 3.8\%$ ,  $p < 0.05$ ). If 21 children with iatrogenic causes (monoporosis as a result of an incorrectly performed intramuscular injection) were diagnosed with equinus on the foot before treatment, after rehabilitation measures, we noted that the position of the sole of the foot was normalized in almost all of them. all children. After the entire rehabilitation (rehabilitation course of 45 days), scoliosis in children before treatment decreased, in 90% of children it returned to normal, which indicates the high effectiveness of the rehabilitation we proposed. Orthopedic mode is installed. After rehabilitation measures in children of the main group, varus deformity of the foot, sprain, and recurvation decreased by  $89.4 \pm 5.6\%$ , and in the control group they were ( $56.7 \pm 4.3\%$ ,  $r < 0.05$ ). Statistically significant backward bending in the ankle joints was observed in  $67.3 \pm 4.6\%$  in the main group and  $35.5 \pm 3.7\%$  in the comparison group ( $r < 0.05$ ).

However, when studying the effectiveness of rehabilitation in groups, despite the severity of the pathology, in group I the restoration of musculoskeletal system functions was better, and in group II it improved slightly. All patients had stepwise, varus, and recurvature deformities before treatment [9]. After rehabilitation measures, a splint bandage was installed to improve the functional state of the joint. Also, the damaged legs were corrected into the correct position using orthoses and orthotics [10]. The increase in muscle strength of the plantar flexors and extensors was  $93.6 \pm 5.4\%$  in the main group and  $65.2 \pm 4.3\%$  ( $r < 0.05$ ) in the comparison group. In the main group, the strength of the extensor muscles of 1 finger increased (in points from 0 to 5) and during the rehabilitation period reached 5 points, which amounted to  $83.5 \pm 4.4\%$  in the main group and  $67.8 \pm 3.2\%$  in the control group. In the proximal sections, a greater increase in muscle

strength was observed than in the distal sections, and the muscle strength of the legs was better restored, which is probably due to more pronounced pathological changes in the floor muscle groups of the legs [11]. Patillary reflexes were restored in both groups (from  $6.8 \pm 3.7\%$  to  $75.6 \pm 7.3\%$  in the main group,  $54.3 \pm 5.6\%$  in the control group,  $r < 0.05$ ); In the main group, plantar reflexes ranged from  $6.8 \pm 3.7\%$  to  $80.4 \pm 8.2\%$  compared to  $49.8 \pm 4.3\%$  in the control group ( $r < 0.05$ ).

### 4. Research Results

In pediatric practice, it has been proven that the main causative factor in damage to the peripheral nervous system is the use of non-steroidal anti-inflammatory drugs in injection form; for clinical-neurological, anthropometric examination, analysis and correlation of ENMG, early diagnosis of complications arising in patients, disease prevention, increasing the effectiveness of treatment and preventive measures.

According to the data of the main group that used the developed rehabilitation complexes with the inclusion of the drug Ipigrix in this process, the following changes occurred: motor disorders in  $85.6 \pm 3.4\%$  of children decreased on average ( $p < 0.05$ ); in the main group, the ability to climb stairs to the first and second floors without the use of additional support (barrier, belt) increased by  $25.7 \pm 6.0\%$  ( $p < 0.05$ ); lack of exercise tolerance was noted in  $68.3 \pm 3.8\%$  in the main group and  $21.8 \pm 4.5\%$  in the control group. In the main group, a statistically significant improvement was achieved in the form of pain reduction by  $73.2 \pm 6.4\%$  ( $p < 0.05$ ), and dependence on NSAIDs decreased from  $45.4 \pm 3.7\%$  to  $4.2 \pm 1.6\%$  ( $p < 0.05$ ).

A rehabilitation program has been developed, reliable early diagnosis of post-traumatic neuropathy and early ENMG examination of patients with neuropathy of the peripheral nervous system, selection of treatment tactics for the disease and assessment of its results, as well as increasing the effectiveness of early comprehensive medical rehabilitation of children with this neuropathy diseases [12,13].

### 5. Conclusions

In the treatment of patients with damage to the peripheral nervous system, in contrast to the principles of traditional treatment, long-term rehabilitation and the use in this process of complex treatment of patients with pharmaco-physio-mechanotherapy and orthopedic methods leads to an improvement in the quality of life of patients, as well as the prevention of disability.

### REFERENCES

- [1] Asbury A.K. Pain in the peripheral nervous system. // to n. "Internal illnesses". T.10. - M., honey. - 2017. - pp. 333-354.

- [2] Asbury AK, Arnason BG, Karp KR, McFarlin DE. Criteria for diagnosis of Guillain-Barre syndrome // *Ann. Neurol.* 2018. – Volume 3. – No. 6. - P. 565-566.
- [3] Yusevich Yu.S. Electromyography of skeletal muscle tone and normal pathology. M.: Medgiz, 2013 – 162 p.
- [4] Shamburov D.N. Infectious lesions of the peripheral nervous system // *Multivolume guide to neurology.* M.: Medgiz, 2012. - T.Z. - P. 13-84.
- [5] Khokhlov A.P., Savchenko Yu.N. Myelinopathies and demyelinating diseases. M.: Medicine, 2016. – 207 p.
- [6] Futter D.S. Diseases of the nervous system in children. M.: Medgiz, 2018. – 462 p.
- [7] Khavinson V.Kh. Immunoregulatory therapy for diseases and injuries: Dis.. Doctor med. sciences in the form of sciences. doc. L., 2017. – 49 p.
- [8] Travell D jG., Simona D.G. Myofascial pain: Per. English M., 2019. – T.2. - 608 p.
- [9] Rudzit A.A. Comprehensive characteristics of changes in the functional nervous system and care: Abstract. diss. sugar Honey n uk. L., 2018. – 20 p.
- [10] Nalimov V.V. Theory of experiment. M.: Nauka, 2015. – 181 p.
- [11] Neurology / Ed. M. Samuels: Trans. from English M.: Praktika, 2017. – 640 p.
- [12] Neurochemistry / Ed. I.P. Ashmarina. M.: Publishing house Ros. AMN, 2016. – 469 p.
- [13] Emergency neurological care in childhood / Ed. J.M. Pelloka, E.K. Mayer: Trans. from English M.: Medicine, 2018. – 575 p.