THE NEW ARMENIAN MEDICAL JOURNAL
Vol.5 (2011), No 3, p.21-26

REHABILITATION OF PHYSICALLY CHALLENGED CHILDREN IN A SPECIALIZED CENTRE SETTING

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Abstract

Children's disability is not only a medical but also a social problem that concerns all the members of handicapped children's families and the State as well. The article outlines the structure of reasons underlying children's disability in the Russian Federation. The necessity to further elaborate methods for treatment and rehabilitation of physically challenged children is also point out. Health authorities have to solve several tasks such as assessment, projection, working out recommendations for rehabilitation of physically challenged children. Analysis of data on rehabilitation of physically challenged children signifies to possibility to improve or even strike off disability group in 25.9% patients. Children at early age have high potential for such improvement.

The patients were divided into 2 groups in accordance with their age, nosological entity, and disease manifestation. Rehabilitation therapy turned out effective both for patients, who constantly stay in the Rehabilitation Center (RC), and for those, who were in the RC temporarily. The efficiency of therapy was 2 times higher for the category of communication (decrease in number of patients with the 3rd degree of restriction) in the 1st group compared with the 2nd Group. To a greater extent we observed the growth in number of patients with the 1st (simple) degree of restriction for such categories as self-care (4.7 times versus 3.8), orientation (2.1 times versus 1.8), control over one's behavior (1.5 times versus 1.3). There were no differences in other categories of vital activity.

Keywords: rehabilitation, infantile cerebral paralysis, children and adolescents, specialized center.

INTRODUCTION

The problem of physically challenged children rehabilitation is one of the urgent medical and social problems in Russia. It is solved within the framework of individual programs of rehabilitation, elaboration of which is stipulated by the Federal Law "About social protection of handicapped people in Russian Federation". Special measures are taken by the federal task program "Physically challenged children" that is aimed at formation of the base for complex solution of problems of physically challenges children and their families. Health authorities have to solve several tasks such as assessment, projection, working out recommendations on rehabilitation of physically challenged children. Analysis of data on rehabilitation of physically challenged children signifies to possibility to improve or even strike off disability group in 25.9% patients. Children at early age have high potential for improvement. At the age from 0 to 4 years, in 33.5% of physically challenged children the recovery or improvement is possible as regards the main disorder and activity limitation that led to their disability. This possibility is conditioned by a necessary complex of measures to be implemented. All the above cited determined the aim of the research: rehabilitation of physically challenged children in a specialized centre setting.

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MATERIAL AND METHODS

The research involved 70 children at the age from 1 to 16 with different diseases of nervous system (G) (VI class in the list of ICD-10). The specialists from municipal Medical and Social Expert Commission established the diagnosis before admission of a patient to the rehabilitation centre (RC). Patients' referral to the RC was not always timely; this latter is

proved by a great variety in age. It is connected with the difficulty of setting diagnosis in polyclinics or hospitals and impossibility of diagnosis acceptance by a patient's parents. The examination consisted of a clinical trial, conventional analyses of blood, urine and intestinal discharge. According to indications additional blood analyses (bilirubin and its fractions, SPGT, SGOT, cholesterol and sugar) were performed; thyroid gland hormones were studied by means of an automatic analyzer "Elecsys 1010" ("Roch", Switzerland). All the patients were examined for their immune status by means of laser flow cytometry. Before the child's examination the questionnaire survey was conducted with parents questionnaire poll, written and informed consent for additional examination and treatment correction was obtained. The research was carried out upon patient's admission to the RC and after 6 months of his/her stay there (after the end of a rehabilitation course). The additional examination was necessary for comprehensive assessment of children's and adolescents' health status.

While analyzing the results, methods of parametric statistics were used: Student's criterion for assessment of statistic significance of disparity (t) and correlation analysis (Pearson's linear analysis) for assessment of dependence.

RESULTS AND DISCUSSION

All the patients were divided into 2 comparable groups in accordance with their age, nosological entity, and disease manifestation. The first (main) group consisted of children and adolescents, who constantly visited the RC, the second group (the group of comparison) included children who did not constantly visit the RC. For assessment of health status and efficiency of rehabilitation therapy, we used the comparative assessment of main vital activity criteria recommended by "International Nomenclature of Vital Activity Restriction and Social Deficiency". We defined 7 criteria of vital activity (self-care, mobility, learning, ability to a play activity, orientation, communication, and control over one's behavior) and pointed out the degrees of restriction starting with 1 (minimal) up to 3 (maximal). The categories and degrees of restriction were assessed in accordance with a patient's age.

The psychoemotional state of a patient plays an important role in control on efficiency of the therapy. It was estimated according to the following parameters:

1) the contact is in accordance with a patient's age or there is no contact;
2) a child is active or passive;
3) a child is energetic or inert;
4) a child is cheerful or languid;
5) a child works with pleasure or just because of the necessity;
6) child's physical efficiency is decreased or sufficient.

Table 1.

Vital activity and social deficiency restriction of the 1st group of patients suffering from infantile cerebral paralysis

Vital activity criteria	Before treatment				After treatment			
	Degrees of restriction			Total	Degrees of restriction			Total
	1	*2*	*3*		*1*	*2*	*3*	
Self-care	3	16	16	35	14	9	12	35
Movement	6	11	18	35	5	22	8	35
Learning	4	12	19	35	6	21	8	35
Play activity	7	14	14	35	8	23	4	35
Orientation	7	14	14	35	15	17	5	35
Communication	9	16	10	35	6	28	1	35
Control over one's behaviour	10	16	9	35	15	17	3	35

Before therapy patients of the 1st group had limitations of vital activity and social deficiency according to all criteria. However, the maximum changes were recorded for such criteria as self-care, movement, communication, play activity, and orientation. They were predominantly of the 3rd and 2nd degree of restriction. In the categories of communication and control over one's behavior the leading position was taken by the 1st and the 2nd degrees of limitation. The psychoemotional status differed from their peers' in about half of the patients with the exception of physical efficiency index that decreased to a lesser degree.

Prior to therapy initiation patients of the second group also had disorders of all vital activities and social deficiency (Table 1). Their character and degrees had no significant differences in comparison with the patients of the 1st group. The changes of psychoemotional status were not considerably different with the exception of the lesser frequency (2.5 times) of children, whose behavior could be related to the criterion "languid".

The therapy of both groups included use of medicines and drug-free methods [*Rogov A. et al., 2005 a; b; 2008 a, b; 2009; Rogov A., 2007; 2009; Rogov A., Vlasov A.Ju., 2008; 2009 a; b; Barabash R. et al., 2009*]. There were such medicines as immunotropic drugs (bronhomunal, timalin), drugs regulating metabolic processes (succinic acid, cod-liver oil), phytopreparations (garlic, dill seeds, caraway, bran). Drug choice and the way of its introduction were determined by a patient's age, clinical manifestation and changes in the immunogram. Drug-free methods of rehabilitation were dominant. Therapeutic physical training consisted of a complex of passive and active exercises. At exercise therapy we took into consideration latent potential abilities of a patient and followed didactic principles such as simplicity, systematic character of remedial gymnastics, proceeded from simple to difficult, from the well-know to unknown. The intensity and duration of exercises depended on a patient's age, form of infantile cerebral paralysis (ICP) and the presence of associated pathology. The general differentiated massage with dominance of relaxing methods was also applied. The massage lasted for 25 minutes and the course consisted of 15 procedures. Therapeutic physical training was held in the form of individual and mini-group (2-3 persons) lessons 3 times a week. The duration of a lesson was 30 minutes. This training included passive-active and active physical exercises including breathing exercises, exercises for coordination, relaxation, normalization of limbs and head pose and position, carriage and ambulation correction, exercises with balls (diameter = 85 *cm*). The tempo of exercises varied from slow to middle, the amplitude of movements was maximal. The initial positions were the following: lying on the back, stomach, standing on the knees and hands, sitting position, kneeling and simply standing.

Table 2.

Vital activity and social deficiency restriction of the 2nd group of patients suffering from infantile cerebral paralysis

Vital activity criteria	Before treatment				After treatment			
	Degrees of restriction			Total	Degrees of restriction			Total
	1	*2*	*3*		*1*	*2*	*3*	
Self-care	4	15	16	35	15	13	7	35
Movement	6	13	16	35	5	23	7	35
Learning	4	24	7	35	5	16	14	35
Play activity	9	16	10	35	10	19	6	35
Orientation	8	13	14	35	14	15	6	35
Communication	9	12	14	35	5	27	3	35
Control over one's behaviour	10	16	9	35	13	20	2	35

Table 3.

Assessment of psychoemotional condition of children suffering from infantile cerebral paralysis

Indexes	Main group (n=35)		Group of comparison (n=35)		X^2	P
	Before treatment	After treatment	Before treatment	After treatment		
Contact:						
a) do not get into contact	18	14	20	17	33.69	<0.002
b) in accordance with the age norm	17	21	15	18	38.90	< 0.002
Child:						
a) active	21	26	18	19	37.80	<0.002
b) passive	14	9	17	16	29.49	<0.002
Child:						
a) energetic	16	28	13	22	45.63	<0.002
b) inert	19	7	22	13	36.09	<0.002`
Child:						
a) cheerful	17	21	28	33	77.04	<0.002
b) languid	18	14	7	2	13.59	<0.01
Child works:						
a) with pleasure	20	28	18	23	49.49	<0.002
b) because of the necessity	15	7	17	12	23.3	<0.002
Physical Efficiency:						
a) decreased	13	8	17	12	19.83	<0.002
b) sufficient	22	27	18	23	58.03	<0.002

X^2 : the index of Pearson's correspondence.
P: reliability of changes in indexes after treatment in the main group and group of comparison.

After the end of treatment positive dynamics for all vital activity criteria except learning in patients of the main group was recorded (Table 1). The number of patients with the 3rd degree of restriction decreased 10 times for the criterion of communication, for play activity it decreased 3.5 times, for control over one's behavior it became 3 times lower, for orientation 2.8 times lower, for movement 2.2 times lower and for self-care it decreased 1.3 times. The number of patients with the 1st degree of restriction considerably increased according to the criterion of self-care (4.7 times), orientation (2.1 times), control over one's behavior (1.5 times). Taking into consideration other vital activity criteria we observed the increase in number of patients with the 2nd degree of restriction. In most cases it was connected with the criteria of communication, play activity, learning and movement. The therapy turned out to be mostly effective in patients according to criterion of self-care: there was a 1.8 times decrease in number of patients with the 2nd degree of restriction; the number of patients with the 3rd degree of restriction decreased 1.3 times and number of patients with the 1st degree of restriction increased 4.7 times.

After treatment the psychoemotional condition of children changed as well. The number of patients in such a category as play activity increased 1.8 times. There was 1.4 times increase of the index "work with pleasure and physical activity is sufficient". As to category "get into contact in accordance with the age norm, active and energetic" the index increased 1.2 times. The therapy turned out to be the most effective in the category of "play activity".

We also observed a positive dynamics for all vital activity criteria except learning (Table 2) of patients of the comparison group (the second group). The number of patients with the 3rd degree of restriction decreased 4.7 times in the category of communication, 4.5 times in the category of control over one's behavior, 2.3 times in the categories of self-care, movement, orientation, and 1.7 times in the category of play activity. However, the increase in number of patients with the 1st degree of restriction was noticed only for the criteria of self-care (3.8 times), orientation (1.8 times) and control over one's behavior (1.3 times). As for other criteria (learning, play activity, movement), we did not observe the same kind of dynamics; moreover, we observed 1.8 times decrease in index of such criterion as communication. There was a considerable increase in number of patients with the 2nd degree of restriction for the categories of communication (2.2 times), and movement (1.7 time); predominantly it was due to patients with the 3rd degree of restriction.

After treatment the psychoemotional condition in patients of the 2nd group changed less than the categories of vital activity (Table 3). There was 1.7 times increase in number of patients from the category of vital activity. Such index as "work with pleasure and physical efficiency is sufficient" increased 1.2 times, and as for the index "contact in accordance with the age norm", it also increased 1.2 times.

Thus, rehabilitation therapy turned out to be effective both for patients, who constantly stay in the Rehabilitation Center (RC), and for the patients, who were in the RC temporarily. There was an decrease in number of patients with the 3rd (marked) degree of restriction for all the criteria of vital activity apart from learning. There was no positive dynamics for this criterion in the 1st group of patients, but in the 2nd group there was 2 times increase in comparison with the initial level. The efficiency of the therapy was 2 times higher for the category of communication (the decrease in the number of patients with the 3rd degree of restriction) in the 1st group compared with the 2nd one. To a greater extent we observed the growth in number of patients with the 1st (simple) degree of restriction for such criteria as self-service (4.7 times *versus* 3.8 times), orientation (2.1 times *versus* 1.8 times), control over one's behavior (1.5 times *versus* 1.3 times). There were no differences in other criteria of vital activity.

The psychoemotional condition of the children from both group changed as well. Positive dynamics was observed in both groups, but it was more expressed in the first group compared with the second group according to such indices as activity, work with pleasure and sufficient physical efficiency.

The patients with diseases of nervous system (different forms of ICP) from both groups got a complex of active, passive and active-passive exercises aimed at elimination of pathologic symmetric and asymmetric tonic neck reflex. We found the position for a patient that will be optimal for the achieving of neck muscles synergism. This position allows holding the head in the position close to its physical condition. Exercises were accompanied by the decrease in the tone of greater pectoral muscles, lumboinguinal muscles and rectus muscles of thigh. The relief was distributed among greater group of back muscles. Redistribution of physical activity led to training of back muscles, gluteus maximus, to the stimulation of immature vestibular system. The usage of massage and drug therapy aimed at correction of metabolic disorders, URI prevention intensified the effect of physiological regulatory action of the higher parts of the CNS after stimulation by a directed proprioceptive signal.

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