Nutritional status and nutritional support in the rehabilitation complex for children with cerebral palsy

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Abstract: Patients with cerebral palsy are at risk for nutritional deficiency. Problems with food intake and impaired nutrient assimilation in infantile cerebral palsy have been repeatedly reported in the works of researchers from various countries over the past 50 years. Revealing in more than half of children with cerebral palsy, nutritional disorders are manifested in them in the form of weight deficit of varying degrees, slowing growth rates, osteopenia (more than 70%), obesity is diagnosed somewhat less often (10-15%).

Keywords: cerebral palsy, children, nutritional status, nutritional support, rehabilitation

INTRODUCTION

Infantile cerebral palsy is the main cause of childhood neurological disability in the world, the frequency of its occurrence in the world is 3-4 cases per 1000 newborns [1,11,13,23,24]. Recently, the number of children with cerebral palsy has increased in the world by 14% [5,8,14,18], amounting to 17 million patients [2,3,4,7,12]. Patients with cerebral palsy are at risk for nutritional deficiency. Problems with food intake and impaired nutrient assimilation in infantile cerebral palsy have been repeatedly reported in the works of researchers from various countries over the past 50 years [1,6,10,14,16]. Revealing in more than half of children with cerebral palsy, nutritional disorders are manifested in them in the form of weight deficit of varying degrees, slowing growth rates, osteopenia (more than 70%), obesity is diagnosed somewhat less often (10-15%) [9,11,15,17-20].

Since the impaired growth and development of this category of children has a multifactorial genesis, the approach to solving the issues of assessing the nutritional status in these patients should be comprehensive.

PURPOSE OF THE STUDY

To study the features of the nutritional history in various forms of cerebral palsy.

MATERIAL AND METHODS

The study involved 95 children aged 3 to 15 years, divided into two groups: the main group consisted of patients diagnosed with cerebral palsy (n = 65), the control group - 30 healthy children observed in family polyclinics at the place of residence.

The observation groups were comparable in age and sex. The distribution of children by age in the observation groups is shown in Figure 1. The age composition of the main group was dominated by children aged 7-9 years - 30 people (46.1%); from 3 to 6 years old - 15 people (23.1%), 10-15 years old - 20 patients (30.8%). While in the control group the distribution of children by age was as follows: 3-6 years old - 20%, 7-9 years old - 40% and 10-15 years old - 40%.

All children, along with the assessment of their case history, in all cases underwent a deep assessment and analysis of the nutritional history.

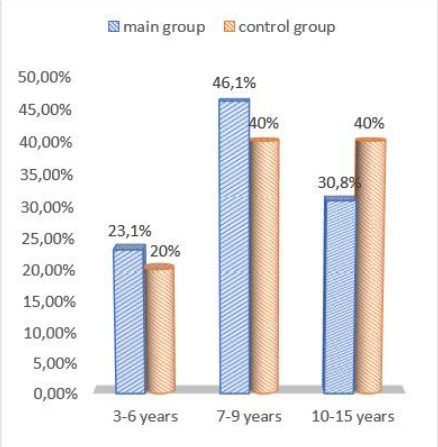

Figure 1. The age composition of the examined children

Depending on the form of infantile cerebral palsy (Figure 2), the children of the main group were divided into five subgroups on the basis of the International classification of infantile cerebral palsy, as the most used in the scientific literature [11]. 67.7% (44 observations) of all cases of infantile cerebral palsy were spastic forms, represented by 3 subgroups: tetraparesis (I subgroup) - 14 patients (21.5%); spastic diplegia (II subgroup) - 15 cases (23.1%); unilateral spastic hemiparetic form was diagnosed in 15 patients (III subgroup, 23.1%). Subgroup IV included patients with dyskinetic form of the disease (11 cases, 16.9%). Subgroup V included 10 patients (15.4%) with varying degrees of severity of static and dynamic ataxia.

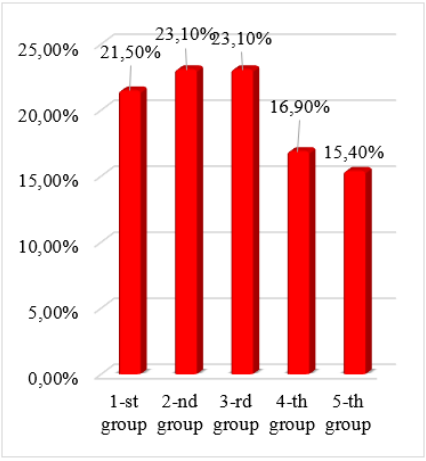

Figure 2. Distribution of patients with cerebral palsy into subgroups depending on the form of the disease

RESULTS AND DISCUSSION

When studying the complaints of parents about the difficulties that arise when feeding this category of children, it was revealed that already from the moment of birth, almost all patients of the main group had problems with feeding.

In general, in children with cerebral palsy, oral-motor dysfunction of varying severity was observed in 63.1% of cases (n = 41), while in children of the control group, on average, only 4.3% of cases. The most pronounced oral-motor dysfunction was noted in the group of patients with tetraparesis (on average, 88.8% of children), while the most frequent symptoms were problems with sucking (100% of the examined were noted from the first days of life), later the parents paid attention problems with the introduction of complementary foods, including solid food, and chewing, as well as difficulty drinking (up to 92.85%). Less pronounced than in the 1st subgroup, signs of oral-motor dysfunction were noted in the IV-th and V-th subgroups of the surveyed - 72.7% and 71.4%, respectively.

The results of studying the oral-motor function (n = 65) in children with cerebral palsy indicated a delay in the development of age-related oral skills (40; 61.5%); delay in the implementation of the swallowing reflex, which is the most common cause of aspiration (34; 52.3%); Difficulty closing the mouth (46; 70.8%); drooling (38; 58.5%); constant protrusion of the tongue, causing food leakage (45; 69.2%); difficult formation of a food bolus due to poor coordination of voluntary movements of the muscles of the tongue (42; 64.6%) (Figure 3).

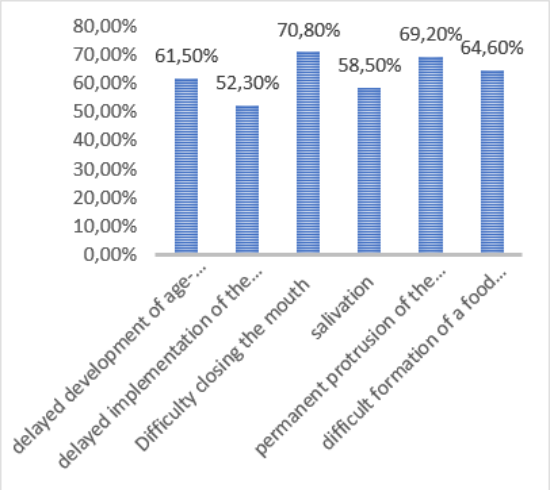

Figure 3. Frequently detected signs of oral-motor dysfunction in children with cerebral palsy

To the questions “Does the child have poor hand / mouth coordination leading to loss of food?” Or “The child does not eat by himself? 8%) stressed that the child does not eat on his own; 15 (31.9%) had poor hand / mouth coordination leading to food loss; and in 10 (21.3%) cases, the child did not have problems with food consumption. Thus, problems with food consumption occurred in 78.7% of patients in the main group (Figure 4). At the same time, 32 (68.1%) of the examined children had a violation of

the natural regulation of nutrition due to communication difficulties, since the patient could not clearly let know about his hunger, satiety, and also taste preferences.

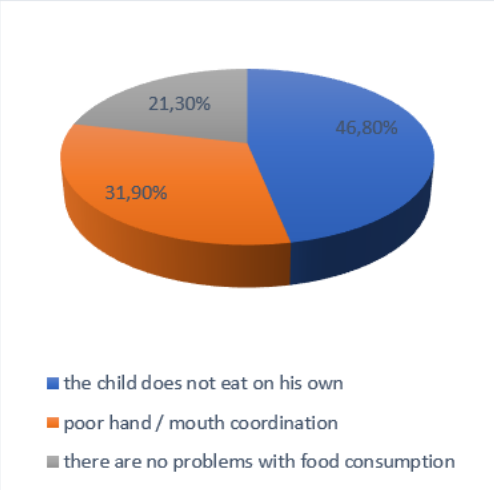

Figure 4. Analysis of food intake problems in patients with infantile cerebral palsy

CONCLUSIONS

1.The causes of nutritional deficiency are due to a number of factors directly related to impaired nervous regulation, the main causes of which are damage to the brain centers, as well as impaired swallowing and chewing functions in this category of patients. Along with this, there is also a lack of active movements, which, in turn, gives rise to a mismatch in eating habits.

2. In infantile cerebral palsy, careful monitoring of nutritional status is necessary, development of a diet with the appointment of nutritional support according to indications and its mandatory correction in the dynamics of observation, taking into account age, the nature of the course of the underlying disease, the presence of concomitant pathology, as well as the volume and intensity of rehabilitation measures.

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