

Changes in psychomotor development in children with perinatal brain hypoxia

Igamova Saodat¹, Djurabekova Aziza², Bazarova Aziza³

Samarkand State Medical Institute, Republic of Uzbekistan,
Samarkand.

Abstract - The central nervous system is the main mechanism that determines the nature of the reactivity and adaptation of the body to a set of environmental factors. At the same time, autonomic imbalance acts as the root cause of the pathological process or as a predisposing factor, and it is advisable to use the cardiovascular system as an indicator of neurohumoral regulation its reactions are associated with the activity of the central nervous system, autonomic nervous system and subcortical centers.

Keywords: newborns, perinatal lesions, psychomotor development.

INTRODUCTION

In the structure of children's disability, perinatal lesions of the nervous system (PNS) account for about 50%, and pathologies of the nervous system in 70% of cases, perinatal factors caused disability in children [1, 3]. Brain damage associated with cerebral hypoxia occurs in 48% of newborns. With asphyxiation of the fetus and newborn, the incidence of brain damage is 20–40%, and in children born with low birth weight, it reaches 60–70% [2, 4]. Damage to the developing brain is the most common pathology of the central nervous system in children, which mainly determines the development of such serious conditions as resistant epilepsy, behavioral disorders, problems of school adaptation [4]. High perinatal mortality is caused by perinatal pathology: 75% of intrauterine deaths are associated with gross malformations of the central nervous system, and among children who die in the first year of life, 40% have at least one malformation of the brain.

Aim. Dynamics of the psychomotor development of newborns with perinatal damage to the nervous system.

MATERIAL AND METHODS.

The study is based on clinical and laboratory examination of 161 newborns with PPNS of hypoxic genesis. The research was based on the Department of Neurology and Neurosurgery of the Samarkand State Medical Institute, the Department of Pediatric Neurology and the Maternity Department of the 1st Clinic of the Samarkand State Medical Institute, the Department of Reanimation and Intensive Care of the 2nd Clinic of the Samarkand State Medical Institute, the Samarkand Regional Branch of the Republican Center for Social Adaptation of Children. We examined 300 children with PPNS of various symptoms and clinical manifestations, of which 127 children with PPNS of hypoxic origin were selected. The obtained data were subjected to statistical processing using a standard software package using built-in statistical processing functions. During statistical processing, the initial array of clinical data was necessarily checked for compliance with the law of normal distribution), standard error of the mean (m), relative values (frequency, %), statistical significance of measurements obtained during comparison. the mean values were determined according to the Student's test (t) with the calculation of the probability of error (P) when checking the normal distribution (according to the excess criterion) and the equality of the total variances (F is the Fisher test). In addition to the initial data, the methods of variational parametric and nonparametric statistics were used with the calculation of the arithmetic mean of the investigated indicator (M), the standard deviation. For a more accurate assessment of the mental state and movement disorders in children, the groups were assessed using the DDST scale in dynamics 4 times a year during the observation period in children. The test allows you to identify early signs of a child's

developmental disorder, as well as to accurately determine the degree of its severity (rough or medium), to assess the effectiveness of the rehabilitation measures carried out and to determine the dynamics of the formation of CPD indicators.

The study of motor skills begins with an assessment of general movements. On our DDST scale, general motor skills are assessed from the first days of life. In the patients we examined, general movements were studied from the age of 3 months. It turned out that they were most unsatisfactorily formed in comparison with other indicators of CPD after 3 months.

THE DISCUSSION OF THE RESULTS.

Only 44.6% of children had normal gross motor development at 3 months. Also after 6 months a low level of general movements was noted. After 6 months and up to a year, there was a stable improvement in the formation of gross motor skills. According to the results of this test, gross motor function was assessed as "normal" in 14.8% and "suspicious" in 72.8% of patients with PN of the central nervous system at birth, by 3 months. depreciation decreased to 19.8%. Compared to baseline (1 month), age periods from 6 months to a year were productive in the formation of gross motor skills, when there was a significant increase in the value of gross motor products. By 1 year, 91% of patients had a normal level of development of general movements (Table 1).

Tab. 1. Dynamics of assessing the development of mental and motor development according to the DDST scale at birth.

Stage		At birth			
		1	2	3	4
mild disease (81)	A	59	-	-	-
	B	(72,8)	-	-	-
	C	12	-	-	-
		(14,8)			
		12			
		(12,4)			
moderate disease (65)	A	50	-	-	-
	B	(76,9)	-	-	-
	C	10	-	-	-
		(15,4)			
		5			
		(7,7)			
severe degree (15)	A	12	-	-	-
	B	(80,0)	-	-	-
	C	1	-	-	-
		(6,7)			
		2			
		(13,3)			

Note: 1 - gross motor skills; 2 - fine motor skills; 3 - social adaptation; 4 - speech development; Test results: A - "suspicious"; B - "normal"; C - "untested".

We assessed fine motor skills on this scale from the age of 3 months, and at the age of 6 months we determined such skills as: "hand movements and actions with objects", at 9 and 12 months of age - "actions". with objects ", " Play and actions with objects ", necessary to determine the formation of dynamic observation skills. At 3 months of age, fine motor skills were better developed than gross ones, therefore, in 61.0% of patients, fine motor skills corresponded to age norms. Only between 6 months and 9 months of age was there a significant increase in this level of fine motor development. By the year of life, the indicator of the development of hand movements has improved.

Tab. 2. Dynamics of assessing the development of mental and motor development according to the DDST scale after 3 months.

Stage		3 months			
		1	2	3	4
mild disease (81)	A	1	18	27	17
	B	6 (19,8)	(22,2)	(33,3)	(21,0)
	C	5	54	45	55
		6 (69,1)	(66,7)	(55,6)	(67,9)
		9	9	9	9
		9 (11,1)	(11,1)	(11,1)	(11,1)
moderate disease (65)	A	4	27	46	53
	B	0 (61,5)	(41,5)	(70,7)	(81,5)
	C	2	34	15	8
		1 (32,3)	(52,3)	(23,1)	(12,3)
		4	4	4	4
		4 (6,2)	(6,2)	(6,2)	(6,2)
severe degree (15)	A	1	9	11	9
	B	1 (73,3)	(60,0)	(73,3)	(60,0)
	C	3	5	3	5
		3 (20,0)	(33,3)	(20,0)	(33,3)
		1	1	1	1
		1 (6,7)	(6,7)	(6,7)	(6,7)

Note: 1 - gross motor skills; 2 - fine motor skills; 3 - social adaptation; 4 - speech development; Test results: A - "suspicious"; B - "normal"; C - "untested".

Psycho-speech sphere on the DDST scale is assessed using indicators such as "speech understanding" and "active speech". Assessment of speech perception and understanding was assessed on a scale of 4 months to 1 year. The study of active speech on this scale began at the age of 6 months. In the

examined patients at the age of 6 months, active speech corresponded to the age requirements in 82.0% of cases. Speech comprehension and indicators of active speech are closely related. In the patients we examined, it was noted that the formation of active speech did not depend on the formation of understood speech. Insufficient development of speech comprehension in the subjects was probably reflected in the development of some skills, such as sensory development, constructiveness, visual activity and social adaptation.

For a complete assessment of CPD, it is necessary to investigate the indicator of the child's "social behavior". 73.1% of the studied patients with MG, according to their parents, according to the teacher, did not experience difficulties in "social behavior".

Thus, in children who underwent PN of the central nervous system, significant violations were observed in the PPA, especially considering their total number (91.5%). In 41 out of 45 (91.1%) children, the level of development of general movements corresponded to the requirements of the scale.

In dynamics after standard therapy and continuous complex rehabilitation at FCSADF, and in particular reflex locomotion according to Voight, the DDST indicator by 12 months of age in patients with OH had a positive trend, the results in gross motor skills were "normal" in 87.7% of cases. Development of speech and small motorized activities - 85.2% and 87.7% of the norm. But even in 11.1% of patients, the tests were unsuccessful and the result was "unconfirmed." In grade II patients with PN of the central nervous system, by 12 months. The results were somewhat different, 7.7% of gross motor skills remained "suspicious", speech development in 4.6% of cases, fine motor skills - 9.2%. Patients with a severe degree of PN of the central nervous system by 12 months of age after prolonged rehabilitation tactics showed positive results.

CONCLUSION.

Based on the foregoing, the therapeutic measures carried out for newborns in the course of treatment and their management at the stages of rehabilitation should be individualized depending on the degree of brain damage during the recovery period.

By the age of one year, adult children with the emergence of verticalization and speech functions were sent for social and psychological rehabilitation. In children with residual residual organic phenomena, the most serious and severe outcomes were cerebral palsy and epilepsy, which require long-term and careful monitoring not only by neuropathologists, but also by psychologists, sociologists and teachers for their adaptation. to life in conditions of rehabilitation.

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