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Adaptation-Compensator Reactions and Psychomotor Development in Children with Delay of Perinatal Development

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ABSTRACT

Purpose. Study of the adaptation period of newborns with intrauterine growth retardation.

Material and methods.A prospective and follow-up observations as well as examination were conducted in 276 newborns: 236 of them were with intrauterine growth retardation and 40 healthy (control),in the following age periods: early neonatal period (5th-7th days of life); 1-6 months; 6-12 months; 12-24 months; 24-36 months were selected on the basis of 'case-control'. We used the clinical-anamnesis and the follow-up method when research was conducted.During the clinical and medical examination analysis of the health status of the mothers were conducted, such as their obstetric and gynecological history, the course of pregnancy and childbirth, using histories of pregnancy and childbirth; with the follow-up method: the closest follow-up was analyzed (during the early and late neonatal period) and further for 3 years of life, that is, during the period of early childhood.

Outcome. The analysis showed that in the group of premature babies 78.9% of the babies were born at a gestational age earlier than 35 weeks. This can be affected on the peculiarities of the course of the adaptation period in the postnatal period, since it is precisely in the early neonatal period that adaptive reactions proceed with the greatest stress. Evaluation of anthropometric indicators of underweight children by the gestation period showed the need for careful monitoring of the health status of this category of children with the optimal organization of the nutrition structure, the necessary correction of diets, and the appointment of treatment and health measures.

Conclusion. Evaluation of the adaptation period of underweight children to the gestation period showed the need for careful monitoring of the health status of this category of children with the optimal organization of the nutrition structure, the necessary correction of diets, and the appointment of treatment and health measures.

KEY WORDS: Children, intrauterine growth retardation, adaptation, underweight children by gestation, full-term and premature newborns.

INTRODUCTION

According to the WHO and various authors, the mortality of full-term and premature babies with intrauterine growth retardation (IUGR) consistsfrom 5% to 30% [5.13]. The delayed growth and development of the child at the antenatal stage is one of the most common causes of perinatal morbidity and mortality in newborns, in particular they with the premature babies determine the high-risk group for the formation of perinatal morbidity, fetopathy, congenital malformations, early death and cause impaired patient health in subsequent years of life [6, 8, 9].

The transition to postnatal life is accompanied by a change in physiological, biochemical, immunological and hormonal functions. Violations of the adaptation process jeopardize the life and health of the child. States that reflect the process of adaptation to childbirth, new living

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conditions are called transitional (borderline, transient) states of newborns [2,7].

One of the main features of the neonatal period is the adaptation process. The neonatal period ends with the end of the period of adaptation to conditions of intrauterine life, and the disappearance of borderline (transient, adaptive) states. The duration of the adaptation period varies from 2.5 to 3.5 weeks in full-term infants, and even longer in premature infants. For convenience, the Expert Committee ofWHO suggested that the first 4 weeks of intrauterine life (the first 28 days) be considered a neonatal period.

Tothis date, it has been established that the leading role in the pathogenesis of IUGR syndrome belongs to the violation of the uterus-placental blood circulation and morpho-functional changes in the placenta due to various non-medical (social, domestic, psychological, environmental) and medical factors caused by the pathology of the mother and fetus [1, 3,4,12]. In recent years, cases of a combination of a delay in the development of the fetus with congenital malformations (CMD), including those incompatible with life, have become more frequent [10,11]. All this determines not only the medical, but also the social significance of the problem.

Purpose of research is to study the adaptation period of newborns with intrauterine growth retardation.

MATERIALS AND METHODS

Research was conducted on a clinical and laboratory examination of 276 newborns, 236 newbornshad IUGR, were born in the maternity department of the RSNPMC Pediatrics Hospital, as well as hospitalized from maternity centres in Tashkent. At the second stage of nursing,these newbornslooked after at these places while 40 newborns had nohealth issues.

The criteria for inclusion in the survey were:

The presence of IUGR of various degrees; the definition of IUGR is the delay of a newborn in mass or in growth by more than 2 standard deviations and below the average value for a given gestational age, or as body weight at birth <10 percentiles below the average value for a given gestational age. Full-term infants with IUGR are considered to be children born at 37-42 weeks of gestation of low birth weight by gestational age, premature babies with IUGR are babies born prematurely to gestational age (up to 37 weeks of gestation).

-parental consent would be required for the child to participate in the study:

Exclusion criteria for the survey were:

-multiple Congenital Malformations (CM)

-congenital malformations of the brain;

-traumatic damage to the central nervous system;

-endocrine pathology;

-congenital hereditary pathology.

The criteria for inclusion in the survey were:

- The presence of consequences of the IUGR syndrome, assessed in the early neonatal period according to the definition of ICD 10 - P05, including subsections P05.0; P05.1; P05.2; P05.9.

Children with a dysplastic variant of IUGR were also not included in the group of children examined, since according to E.N. Kolosova (2001) changes in organs and systems and the presence of gross malformations in this contingent of newborns are accompanied by the formation of congenital immunodeficiency as a result of gene and chromosomal mutations (E. A.Bliznetsova, 2017).

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Overall,286 examined children were divided into 3 groups: the 1st group consisted of 146 (51.0%) full-term babies with IUGR, the second group consisted of 90 (31.5%) premature babies with IUGR, and an adequate assessment of laboratory data was formed by random sampling the 3rd group (control - 50 (17.5%) practically healthy newborns) from pregnant children, without manifestations ofZVRP.

General clinical studies: daily examination of patients was carried out for the following procedures, registration and assessment of the clinical course of the disease, severity of temperature reaction, symptoms of intoxication, catarrhal syndrome, etc. The examined newborns underwent a full clinical and laboratory examination, such as assessment of physical development, morphofunctional maturity, peripheral blood test, according to indications, chest and abdominal radiography, neurosonography, and immunological, biochemical, hormonal, bacteriological studies. All examined children had a general blood test, a general urine test, a biochemical blood test to determine the total protein, bilirubin, sugar, and bacteriological tests (blood, cord smears, conjunctiva).

Prospective and follow-up observation and examination was carried out on a case-control basis in the following age periods: early neonatal period (5^{th} -7^{th}days of life); 1-6 months; 6-12 months; 12-24 months; 24-36months.

The following methods were used: - clinical and medical history: an analysis was made of the health status of mothers, their obstetric and gynecological history, pregnancy and childbirth, using pregnancy and childbirth histories; - medical history: the nearest medical history was analyzed (during the early and late neonatal period) and later for 3 years of life, that is, during the period of early childhood. During the study, an examination card was filled out for each child, in which the features of the biological and social history, a comprehensive assessment of the state of health, the nearest catamnesis data, laboratory data, functional status, analyze the dynamics of the health status on the second and third year of life,and further strategy for the management of the patient.

An analysis of the incidence was carried out by using the child's development history and taking data from the medical history in the case of hospitalization of the observed children in hospitals. A dynamic study of physical status was carried out by using the software 'Anthro' as it was provided by WHO for personal computers, and using percentile nomograms of WHO, which allows tracking dynamics of anthropometric indicators of physical development and obtaining a graphical representation of the results in the form of curves.

Anthropometric studies were carried out by using standard methods. The following parameters were determined: body weight, height, BMI, AB, OT, OT / AB ratio.

Physical development indicators were compared with the standards of growth and development of children recommended by WHO (2006). Children whose growth, length, and weight indicators, whose bodies were relatively aged 2CO and + 2CO relative to their age were regarded as children with normal indicators of physical development. Valueslocated below -2CO and to the -3CO curve, above + 2CO and to the + 3CO curve were considered low and high, requiring appropriate decisions to prevent wasting and obesity. Indicators below the -3CO curve and above + 3CO were considered abnormal. Nutritional status was assessed by body mass index (BMI): below the -3CO-curve is severe protein-energy malnutrition (BENP); in the field of -3CO and -2CO- BENP of moderate severity; in the field of -2CO and -1CO-BENP mild; between + 1CO and + 2CO- moderately increased nutrition; between + 2CO and + 3CO-increased; above + 3CO - obesity.

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Physical development indicators were compared with the standards of growth and development of children recommended by WHO (2006). Children with the indicators of growth, height and weight were relatively suitable to their age

-2CO and + 2CO, children were regarded with normal indicators of physical development. Valuesbelow -2CO and reaches up to the curve.

-3CO, above + 2CO and up to the + 3CO curve, were considered as low and high, requiring appropriate decisions to prevent exhaustionand obesity. Indicators below the -3CO curve and above + 3CO were considered abnormal. Nutritional status was assessed by body mass index (BMI): below the -3CO curve, severe malnutrition or protein-energy malnutrition (BEN); in the field of -3CO and -2CO- malnutrition; in the field of -2CO and -1CO, the risk of developing malnutrition; between + 1CO and + 2CO - the risk of developing obesity; between + 2CO and + 3CO - obesity; above + 3CO - severe obesity.

The results of obtained statistical processing. The data obtained during the study were subjected to statistical processing on a Pentium-IV personal computer using the Microsoft Office Excel-2012 software package, including the use of the built-in statistical processing functions.

We used methods of variation parametric and nonparametric statistics with the calculation of the arithmetic mean of the studied indicator (M), standard deviation (s), standard error of the mean (m), relative values(frequency,%), the statistical significance of the measurements when comparing the average valueswas determined by the criterion Student (t) with the calculation of the probability of error (P) when checking the normality of the distribution (by the excess measure) and the equality of the general variances (F - Fisher's test). For statistically significant changes, a confidence level of P <0.05 was taken. The statistical significance for the qualitative valueswas calculated using the $\chi 2$ criterion (chi-square) and the z-criterion (Glanz) in the following formula:

$$z = (p_1 - p_2)\sqrt{\frac{n_1 \cdot n_2}{p(1-p)\cdot(n_1 + n_2)}}$$

where p1 = μ1 / n1 and p2 = μ2 / n2 are the compared experimental frequencies, and p = (μ1 + μ2) / (n1 + n2) is the average frequency of the appearance of the trait in both groups.

In the analysis of the obtained data, modern mathematical methods of statistical processing of clinical research data were used: case-control clinical trials with an assessment of relative chance (OR) and relative risk (RR), to determine which ante-, intra- and postnatal factors were evaluated.

RESULTS AND ITS DISCUSSION

The Apgar scale indicates the degree of asphyxiation of the newborn - how much it suffered from a lack of oxygen, in our case, asphyxiation can be considered as a consequence of the development of chronic intrauterine hypoxia - asphyxiation of the newborn, which developed antenatally in conditions of prolonged placental insufficiency. Severe asphyxia was recorded in 6 (4.1%) full-term and 12 (13.3%) premature infants with IUGR (P <0.01; $\chi 2$ = 6.72); moderate asphyxia was noted in 32 (21.9 %) of full-term infants and 34 (37.8%) premature infants (P <0.001; $\chi 2$ = 6.95), mild - in 106 (72.6%) full-term and 44 (48.9%) premature infants IUGR (P <0.001; $\chi 2$ = 13.52) (Table 1)

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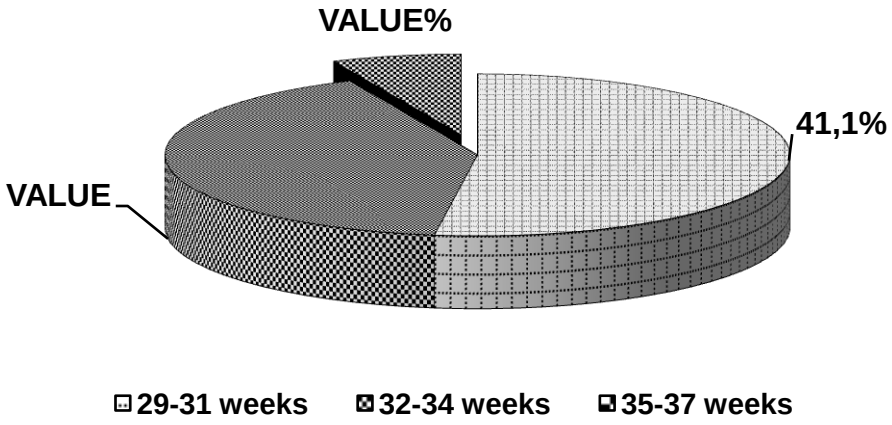
Table 1. Apgar Birth Status

Score	IUGR Full term infants(n=146)		IUGR Premature infants (n=90)		$\chi 2$	P
	Abc	%	abc	%		
0-3	6	4,1	12	13,3	6,72	<0,01
4-6	32	21,9	34	37,8	6,95	<0,01
6-7	106	72,6	44	48,9	13,52	<0,001
8-10	2	1,4	0	0,0	1,24	>0,05

An analysis of the objective state of newborns at birth shows that 2 (1.4%) of the 1st group of babies were born in satisfactory condition corresponding to a score of 8-10 on the Apgar scale, at birth they screamed right away, with pink skin color, were immediately attached to the chest and actively sucked mother's breast. The remaining newborns at birth had deviations of varying severity. For example, in a serious condition, 6 (4.1%) were born in group 1, 12 (13.3%) in group 2, an average degree of asphyxia was observed in 32 (21.9%) cases of group 1 and 34 (37.8 %) - in the 2nd group. Children born on 6-7 points on Apgar accounted for 106 (72.6%) and in group 2 - 44 (48.9%).

An analysis of premature babies in the studied category of children depending on gestational age revealed that 47 (52.2%) of the babies were born at the age of 35-37 weeks, 37 (41.1%) at the age of 32-34 weeks, 6 (6, 7%) - for a period of 31-27 weeks of gestation (Fig. 1). This analysis showed that in the analyzed group of preterm infants 78.9% of the babies were born at a gestational age earlier than 35 weeks. This cannot be affected to the peculiarities of f the course of the adaptation period in the postnatal period, since it is precisely in the early neonatal period that adaptive reactions proceed with the greatest stress.

Fig. 1. The distribution of preterm infants by gestational birth



On examination, a large fontanel was normal in 64 (43.8%) newborns of group 1 and in 17 (18.9%), pulsed in 31 (33.3%) and 37 (31.6%), swelled in 16 (17.2%) and 19 (16.2%) and in most cases it is tense in 36 (37.2%) and 47 (40.2%) (Tab2).

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Table 2. The condition of the large fontanel in newborns with IUGR in neonatal period

Indicators	1st group (n=146)		2nd group (n=90)		χ2	P
	abc	%	abc	%		
Average	64	43,8	17	18,9	4,29	<0,001
Pulsating	56	38,4	36	40,0	0,25	>0,05
Soaring	12	8,2	15	16,7	1,86	<0,005
Pressured	14	9,6	22	24,2	2,89	<0,01

The results of neurosonography showed that 64 (43.4%) were born in group 1 without a brain pathology,and 18 (20.0%) in 2 groups (P <0.001, $\chi 2 = 4.05$). (tab. 3).

Table 3. The results of neurosonographic examination of newborns

Indicators	1st group (n=146)		2nd group (n=90)		χ2	P
	abc	%	abc	%		
Without pathology	64	43,8	18	20,0	4,05	<0,001
Local hyper echoic foci subcortical	34	23,3	32	35,6	2,00	<0,001
Diffuse increase in echogenicity of the cerebral parenchyma	24	16,4	17	18,9	0,48	>0,005
Hyper echoic areas one or two way localization	18	12,3	12	10,3	13,86	<0,01
Ventriculomegaly	26	17,8	17	18,9	0,50	>0,05
Gastrointestinalhaemorrhage1st stage	42	28,8	28	31,1	0,37	>0,05
Gastrointestinalhaemorrhage 2nd and 3rd stages	16	11,0	34	37,8	4,01	<0,001

Local hyperechoic foci were found subcortically in 34 (23.3%) newborns of group 1 and 32 (35.6%) - of 2 groups (P> 0.05, $\chi 2 = 2.0$), a diffuse increase in the echogenicity of cerebral parenchyma in 24 (16.4%) and 17 (18.9%) (P> 0.05, $\chi 2 = 0.48$), hyperechoic areas of one or two-sided localization - in 18 (12.3%) and 12 (10, 3%) (P <0.001, $\chi 2 = 13.86$), ventriculomegaly - in 6 (4.1%) and 5 (5.6%) (P <0.01, $\chi 2 = 0.50$) grade II-III - in 16 (11.0%) and 34 (37.8%) (P <0.001, $\chi 2 = 4.01$), respectively, in groups. Analysis of neurosonographic examination showed that 56 (38.4%) of the newborns of group 1 and 70 (77.8%) of the 2 groups were born with one or another deviation.

Most of the children in both groups (80.1% and 75.6%, respectively, in the groups) were breast-fed, only on the artificial - 11 (2.2%) of the 1 group and 9 (10%) - 2 groups, in the mixed - 18 (2.7%) full-term babies with IUGR and - 13 (14.4%) premature babies with IUGR (Table 4).

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Table4. Type of breastfeeding at the time of inspection

Types of breastfeeding	1st group (n=146)		2nd group (n=90)		$\chi 2$	P
	abc	%	abc	%		
Breastfeeding	117	80,1	68	75,6	0,82	>0,05
Bottled feeding	11	2,2	9	10,0	1,07	>0,05
Mixed	18	2,7	13	14,4	0,46	>0,05

All reflexes in the examined newborns with IUGR at birth were saved in the 1st group on average up to 45%, in the second group on average, they were preserved in the fifth of premature infants (P <0.01). In the majority (88.9%) of premature infants, the search reflex is weakly expressed, which is 2.3 times smaller and absent 2.1 times more often than in full-term ones. The same picture is observed in most premature infants; all types of reflexes are weakly expressed (P <0.01) (Table 5).

Table 5. Reflexes in the examined newborns with IUGR

Reflexes	1st group (n=146)		2nd group(n=90)		$\chi 2$	P
	abc	%	abc	%		
Oral reflexes of automatism						
- saved	102	69,9	7	7,8	86,35	<0,01
- weak	36	24,7	70	77,8	63,50	<0,01
-absent	8	5,5	13	14,4	5,52	>0,05
Spinal reflexes of automatism						
- saved	55	37,7	20	22,2	6,13	<0,01
- weak	87	59,6	61	67,8	1,60	<0,05
-absent	4	2,7	9	10,0	5,64	>0,05
Mieloensiphalic reflexes of automatism						
- saved	33	22,6	14	15,6	1,73	<0,001
- weak	108	74,0	65	72,2	0,09	<0,05
-absent	5	3,4	11	12,2	6,82	>0,05

Analysis of table 6 showed that 90.8% of full-term infants with IUGR have symptoms of hypoxic-ischemic encephalopathy (HIE) in the first 7 days, and in almost all premature infants.

Newborns are less sensitive to hypoxia than adults, this is due to the fact that increased tolerance of the developing brain requires lower energy needs. Also, in newborns, and especially in premature infants, there is no growth-caudal type of neural sensitivity to hypoxia.

Due to the high percentage of the oppression symptom (67.8%; P <0.001; $\chi 2$ = 24.85)premature babies with IUGR should be monitored by a neurologist. Conjugation jaundice in both groups was observed at approximately the same frequency.

Subsequently, in 1-3 months, perinatal lesion of the central nervous system (PSCNS) were observed in 54 (71.1%) in full-term infants with IUGR and in 79 (87.8%) in premature infants (P <0.001, $\chi 2$ = 7.24) (tab. 6).

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Table 6. The spectrum and frequency of pathological conditions and diseases which characterises of children with IUGR in various periods of early childhood

Disease	1st group (n=146)		2nd group (n=90)		χ^2	P
	abc	%	abc	%		
0-7 days						
Cerebralischemia	69	47,3	90	100,0	70,45	<0,001
cm excitement	28	19,2	12	13,3	1,35	<0,001
cm oppression	22	15,1	61	67,8	67,84	<0,001
Vegeto-Visceral Dysfunction (VVD)	34	23,3	76	84,4	3,78	<0,001
Respiratory Disorder Syndrome (SDR)	27	18,5	58	64,4	3,11	<0,001
Conjugation jaundice	41	28,1	47	52,2	36,20	<0,05
Congenital Pneumonia	27	18,5	38	42,2	13,05	<00,5
Pneumopathy	11	7,5	42	46,7	0,80	<0,001
Lung atelectasis	3	2,1	34	37,8	7,07	<0,001
1-3 months						
PPCNS	54	37,0	79	87,8	58,40	<0,01
VVD	22	15,1	38	42,2	21,65	<0,05
Acutedisease ofVDP	37	25,3	37	41,1	6,43	<0,001
Pneumonia	29	19,9	18	20,0	42,31	<0,05
Rickets	36	24,7	64	71,1	11,47	<0,001
Anaemia	84	57,5	82	91,1	271,63	<0,01
Joint dysplasia	17	11,6	29	32,2	4,19	>0,05
Lingering jaundice	58	39,7	44	48,9	104,47	<0,001
Diathesis	49	33,6	38	42,2	75,49	<0,001
4-11 months						
PPCNS	51	34,9	82	91,1	71,45	<0,001
Acutedisease ofear	13	8,9	19	21,1	7,08	>0,05
Acutedisease ofVDP	66	45,2	33	36,7	1,67	>0,05
Pneumonia	29	19,9	26	28,9	29,54	<0,001
Rickets	62	42,5	72	80,0	86,25	<0,001
Anaemia	91	62,3	90	100,0	443,16	<0,001
Joint dysplasia	19	13,0	35	38,9	3,71	<0,05
Atopic dermatitis	34	23,3	23	25,6	48,69	<0,05
12-23 months						
Acutedisease ofear	16	11,0	22	24,4	7,50	>0,05
Acutedisease (more than 6 times a year)	46	31,5	51	56,7	14,56	>0,05
Anaemia	60	41,1	87	96,7	73,20	<0,001

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Gastrointestinal diseases inf. and not infectious	27	18,5	39	43,3	12,32	>0,05
24-36months						
Anaemia	54	37,0	86	95,6	79,15	<0,001
Airborne diseases	69	47,3	47	52,2	0,55	>0,05
(more than 6 times a year)	36	24,7	28	31,1	1,17	>0,05

59 (77.6%) children of the 1st group and 82 (91.1%) of the 2nd group developed anemia (P <0.01, $\chi 2 = 5.85$), which continued during the observed period, and rickets also developed (41 (53.9%) and 72 (80.0%), (P <0.001, $\chi 2 = 12.87$).

In the period from 12 months to 36, acute respiratory infections are noted. Pregnant anemia disrupts the formation of adaptive-reserve resources, contributing to the emergence of autonomic disorders, a change in the state of the cardiovascular system, an increase in morbidity, and developmental impairment in children.

The incidence of IUGR syndrome is 2-36%, depending on regional characteristics and does not tend to decrease. Newborns with little gestational age have a higher morbidity and mortality than children whose development corresponds to their gestational age, which determines the relevance of research in this area (Table 7)

Table 7. Weight and height at birth of newborns of low birth weight by gestation.

Indicators	KG		1st group (n=146)		2nd group (n=90)	
500-999 g	0	0	0	0,0	6	6,7
1000-1499 g	0	0	0	0,0	14	15,6
1500-1999 g	0	0	44	30,1	47	52,2
2000 – 2499g	0	0	102	69,9	23	25,6
2500g and greater	40	100,0	0	0,0	0	0,0
Height, cm	50,1±0,9		47,2±0,6		43,7±0,9	

Analysis of children depending on body weight during birth revealed that children with low weight by the gestational age wereborn at the age of 1st group with a body weight of 2000-2499g amounted to 102 (69.9%) children and weighing 15001-1999g - 44 (30.1%). And children of the 2nd group were born earlier than the term with a body weight of 499-999g were 6 (6.7%), with a body weight of 1000-1499g - 14 (15.6%) children, with a body weight of 1500-1999g - 47 (52.2%) 2000-2499g - 23 (25.6%) - 23 (25.6%) children.

In children of group 2, in comparison with group 1, the average values of body weight, body length, head circumference, chest circumference were smaller (P <0.01). (tab. 8).

Table 8. Anthropometric data of newborns with IUGR at birth

Data	1st group (n=146)	2nd group (n=90)	t	P
Body mass	2230,0±202,04	1435,2±5,6		
Body Length (M ± SD)	47,5±1,42	38,0±1,26	3,95	<0,001

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Head circumferen-ce (M ± SD), cm	33,61±0,99	32,33±1,68	5,00	<0,001
Circumference of the chest cell (M ± SD), cm	31,08±1,44	28,7±1,98	0,66	>0,05
Verwerk Index (M ± SD)	1,35±0,06	1,39±0,16	0,41	>0,05

In children of the 2nd subgroup, physical development was in the region of low and very low values (P<0.001; T = 3.7) (Table 9).

Table 9. Assessment of physical development according to centile tables

Data	1st group (n=146)		2nd group (n=90)		$\chi 2$	P
	abc	%	abc	%		
Very low	0	0,0	6	6,7	7,37	<0,01
Low	0	0,0	14	15,6	18,11	<0,001
Below average	76	52,1	47	52,2	5,65	>0,05
Secondary	70	47,9	23	25,6	2,10	<0,001
Above average	0	0,0	0	0,0	-	-
High	0	0,0	0	0,0	-	-
Very high	0	0,0	0	0,0	-	-

The determination of the harmony of physical development is carried out on the basis of the results of percentile assessments of the correspondence of body weight to its growth. Development is harmonious - when assigning the parameters of the child from the 10th to the 90th percentile; disharmonious - from 3 to 10th and from 90 to 97th percentile. Height and body weight in accordance with the age and gender of the child can be determined by percentile scales (table 10).

Table 10. Indicators of harmony in the physical development of children according to body weight to height according to WHO

Interval	Interpretation of an indicator	occurrence in children %
Below 3rd percentile	Dramatically disharmonious development	3
3rd to 10th percentile	Disharmonious development	7
10th-90th percentile	Harmonious development	80
90–97th percentile	Disharmonious development	7
Above 97thpercentile	Dramatically disharmonious development	3

Measurements below the 3rd percentile indicate a “very low” rate of physical development (found in about 3% of children); from the 3rd to the 10th percentile - to the "low" (about 7%), from the 10th to the 25th percentile - to the "lower than the average" (15%). Values

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from the 25th to the 75th percentile are taken as "average" or "certainly normal values" (in 50%). A range from 75 to 90 percentile indicates “above average” (15%), from 90 to 97 percentile indicates “high” (7%) and from 97 percentile and above indicates “very high” ≫ growth (at 3%).

The disharmony of physical development is noted by the majority in 39.5% of full-term infants and in 65 (72.2%) premature infants with IUGR. The sharply disharmonious development in the 2nd group was 3 times greater than in the 1st group (Table 11).

Table 11. Assessment of the harmony of the physical development of the examined children according to centile tables by 3 years

Data	1st group (n=146)		2nd group (n=90)		χ2	P
	abc	%	abc	%		
Harmonious development	98	67,1	19	21,1	2,35	>0,05
Disharmonious development	45	30,8	65	72,2	18,05	<0,001
Dramatically disharmonious development	3	2,1	6	6,7	1,46	>0,05

When comparing the characteristics of psychomotor development during the first three years of life with changes in adaptation in the neonatal periods, it was noted that more than half of children with IUGR have a lag in physical development at an early age, one third have persistent hypotrophy, 40-60% children - mental retardation, neuropathic reactions. In newborns with intrauterine growth retardation, violations and prolongation of the early adaptation period are observed with the most pronounced disorders of the central nervous and cardiovascular systems, as well as deep metabolic changes. Therefore, an objective assessment of the state of adaptive reactions of the fetus and newborn with IUGR is of particular relevance.

The revealed features of the physical development of intrauterine growth retardation in children will further determine the criteria for the early diagnosis of adaptive-reserve capacity disorders.

Leading Russian scientists believe that the IUGR of the fetus and newborn is an important factor in fetal death of the fetus and death in the adaptation period [3, 4].

Mortality among full-term babies with IUGR is 3-10 times higher than that in newborns with normal physical development. About 40% of newborns with IUGR are susceptible to infectious and inflammatory diseases, and mortality in them is directly dependent on the degree of IUGR.

CONCLUSION

Evaluation of the adaptation period of small children to the gestation period showed the need for careful monitoring of the health status of this category of children with the optimal organization of the nutrition structure, the necessary correction of diets, and the appointment of treatment and health measures.

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CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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REFERENCES:

1. Abdurakhmanov, Z. M., &Yemets, I. N. (2020). Long-term outcomes of aortic valve repair in children with congenital heart disease and their predictors. Russian Journal of Cardiology, 25(8), 131-138. doi:10.15829/1560-4071-2020-3971

2. Akhutina T. V., Yablokova L. V., Polonskaya N. N. Neuropsychological analysis of individual differences in children: assessment parameters // Neuropsychology and psychophysiology of individual differences / ed. E. D. Chomsky, V. A. Moskvin. - Moscow; Orenburg, 2015. - 432 c.

3. Aksenov M. M., Semke V. Ya., Vetlugina T. P. Regional features of borderline conditions // Actual issues of psychiatry and narcology (Materials of the Xth scientific reporting session). - Tomsk, 2014. – P. 10-11.

4. Averyanov PF Disorders of cerebral circulation in newborns // Materials of the VI Congress of Pediatricians of Russia “Emergency in children, February 6-8. - M., 2014. - S. 28-29.

5. Bakhodirova Sh. F., Ikhtiyarova G. A., Aslonova M. J., Davlatov S. S. (2020). Features of perinatal outcomes in women after supporting reproductive technologies. European Journal of Molecular & Clinical Medicine, 7(2), 6350-6356.

6. Bakhronov, J. J., Teshaev, S. J., &Shodieva, M. S. (2020). Morphometric characteristics of parts of rat kidney nephron in normal and under the influence of an antiseptician-facility 2 road stimulator on the background of chronic radiating disease. International Journal of Pharmaceutical Research, 13(1), 683-686. doi:10.31838/ijpr/2021.13.01.102

7. BlairM, DeBellD. Reconceptualising health services for school age children in the 21st century // Arch Dis Child. - 2011. - Vol.96. - P. 616-618.

8. Bliznetsova E. A., Antonova L. K., Kulakova N. I. Features of the course of the neonatal period in premature infants with intrauterine growth retardation // Neonatology: news, opinions, education. - 2017. - No.3. - P. 83–88.

9. Hemmi MH, Wolke D, Schneider S. Associations between problems with crying, sleeping and / or feeding in infancy and long-term behavioural outcomes in childhood: a meta-analysis // Arch Dis Child. - 2011. - Vol. 96. - P. 622-629.

10. Ikhtiyarova, G. A., Tosheva, I. I., Aslonova, M. J., &Dustova, N. K. (2020). Prenatal rupture of amnion membranes as A risk of development of obstetrics pathologies. European Journal of Molecular and Clinical Medicine, 7(7), 530-535. Retrieved from www.scopus.com

11. Inoyatova, F. I., &Yusupalieva, G. A. (2016). Significance of complex echographic examinations in diagnosing chronic viral hepatites in children. VoprosyDetskoiDietologii, 14(1), 21-25. doi:10.20953/1727-5784-2016-1-21-25

12. Jarylkasinova, G. J., Mavlyanov, I. R., &Yuldashova, R. U. (2020). Pharmacoeconomic

efficacy of ferrous and ferriciron supplements in the territory of the republic of Uzbekistan. European Journal of Molecular and Clinical Medicine, 7(8), 1310-1315. Retrieved from www.scopus.com

13. Kirillova E. A. Features of the early physical and statomotor development of premature babies with intrauterine growth retardation: Diss. ...candi.med. sciences. - 2017. - 146 P.

14. Pallotto E.K., Kilbride H.W. Perinatal outcome and later implications of intrauterine growth restriction // Clin. Obstet Gynecol. - 2016. - Vol.49. - P. 257–269.

15. Reed GM, Dua T, Saxena S. World Health Organization responds to Fiona Godlee and Ray Moynihan // BMJ. - 2011, - Vol.342. - 1380 p.

16. Rosenbaum P. The randomized controlled trial: an excellent design, but can it answer the big question in neurodisability // Dev Med Child Neurol. - 2010. - P. 52.

17. Skvortsov I.A., Ermolenko N.A. The development of the nervous system in children is normal and pathological. - M.: MEDpress-inform, 2013. - 367 p.

18. Umarova L. N. Perinatal risk factors for the birth of premature babies with very low and extreme low body weight // Medical News. - Belarus, 2016. - No.12. - S. 81-82.

19. Villar J., Puglia F., Fenton T., Cheikh Ismail L., Staines-Urias E., Giuliani F. et al. Body composition at birth and its relationship with neonatal anthropometric ratios: the Newborn Body Composition Study of the INTERGROWTH-21 st Project Pediatre Res 2017.