EFFECTS OF CYTOMEGALOVIRUS INFECTION ON THE NERVOUS SYSTEM OF PREMATURE INFANTS

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Abstract. There were 50 premature babies born in 2022-2023 at the Samarkand Regional Perinatal Center and Maternity Complex No. 1, 30 of them with damage to the nervous system in babies born to mothers with cytomegalovirus infection, 20 A group of conditionally healthy babies born prematurely from mothers without SMVI was studied. For the study, general blood analysis, general urinalysis, neurosonography, and cytomegalovirus analysis were carried out in IFA examination of infants' blood. By PCR analysis, SMVI was checked in the blood of the mother and the baby.

Key words: *Cytomegalovirus infection, infants, neurosonography with dopplerography.*

According to statistics, cytomegalovirus infection accounts for 37.5% of perinatal deaths among infants, and 61.4% of deaths due to congenital malformations caused by SIDS. Congenital cytomegalovirus infection is asymptomatic or severe, and death is often observed as a result of SMVI. According to this, 90% of infants who are severely affected by SMVI may later develop various somatic and neurological complications, while only 5-17% of children without symptoms may develop various pathologies [4,2,3,7,11] . The first rate of primary SMVI in women during pregnancy does not exceed 1%. In such a period, the damage of the fetus of a primary affected woman with SMV infection reaches 30-50%, of which 5-18% of babies show a sign of rapid damage. In 80% of children, congenital SMVI remains asymptomatic and manifests its clinical manifestations later, in 5-18% it is manifested by a severe course of the disease [2,5,6]. The greatest risk for the fetus is infection in the early stages of pregnancy. An average of 2% (0.7–4%) of women experience primary infection during pregnancy, of which 35–40% (24%–75%) are transmitted to the fetus[9].

Fetus inside of infection perinatal death level leader from places one occupies _ Cytomegalovirus infection while fetus inside of infections between the first in place standing , different different of defects in formation main is considered one of the causes [12,13] . of SMVI from the features one cell inside parasitism to do and has the ability to stay in the human body for a long time with periodic reactivation and development. Of the disease clinical of appearances diversity of SMVI of pregnancy desired stage fetus infection infect level with is determined . In the early period of pregnancy, when the fetus is infected, the central nervous system system , heart-blood vein , kidney and another of systems different different

defects harvest will be When infected in the late period of pregnancy, damage to various organs and systems is detected in newborns. With congenital SMVI active late of newborns in the case of 40-90 percent long term neurological consequences and to hear ability loss as well as vision bodies liver damage and kidneys damage observation and sometimes scientist status with completion possible [14].

Congenital SM VI is viremia due to primary or re-infection with the virus or its reactivation in the mother. Clinical manifestations of common SMVI infection include damage to the central nervous system (100%), anemia (79.0%), minor anomalies (38.2%) and congenital heart defects (20.6%), colitis (8.8 %) and is characterized by the addition of various bacterial diseases and mainly lung localization infections (67.6%), as well as the development of disability pathology in the first year of life: children's cerebral palsy (29.4%), neurosensory visual impairment (20.6%) and hearing impairment (2.9%) [2].

The purpose of the study: to study the effects of cytomegalovirus infection on the nervous system of premature babies.

Research materials and methods: Our object of inspection is the regional perinatal center in the city of Samarkand and the maternity complex No. 1 in 2022-2023 50 premature babies were born, their anamnesis, laboratory analyzes and instrumental examinations, as well as catamnesis observation up to one year, were conducted. Babies were studied in two groups: basic and conditionally healthy groups. The main group consisted of 30 premature babies from mothers whose mothers had been diagnosed with SMVI and 20 healthy premature babies whose mothers had not been diagnosed with SMVI. The gestational age of the conditionally healthy group was from 32 to 36 weeks. The body weight of infants in the main group was from 900 grams to 2400 grams in the main group, and in the conditionally healthy group, this indicator was from 1820 grams to 2450 grams in the late neonatal period. it has been. 37(74%) of the total babies were boys, and 13(26%) were girls. In the main group, 90% of babies were born prematurely to women with SMVI, whose mothers were at risk of miscarriage during pregnancy and received inpatient and outpatient treatment. The anamnesis, clinical and laboratory instrumental examination results of the babies, as well as the life anamnesis of the mothers of the babies and IFA and PCR blood analysis for SMVI were studied. Since the effect of SMVI on the nervous system of infants has not been fully studied in the literature, the main group of infants was studied in comparison with the group of conditionally healthy infants .

Analyzes of observed infants were performed in the private clinic "SMART DOCTOR" from the laboratory analyzes of infants: immunoenzyme analysis of SMVI was performed using the Mindray MR-96A device, general blood analysis was performed using the Mindray BS-5000 device, and blood biochemical analysis was monitored using the Mindray BS-380 device. At the LMIsayev Scientific Research Center of Microbiology, Virology, Infectious and Parasitic Diseases at the Samarkand State Medical University, SMVI was examined in the blood plasma of the mother and the baby using the PCR test method BIOER , and the degree of damage was studied. Instrumental examination work in the diagnostic department of the Multidisciplinary Clinic of SamDTU, ultrasound examination (UTT): neurosonography, doppler ography with examinations , the internal organs, mainly the heart and kidneys, were examined and analyzed . After the maternity hospital, the babies were monitored at one month, 3 and 6 months, and at 1 year of age. General blood and urine analysis was performed

during the examination. Also, in the maternity ward, the condition of critical infants was monitored every five to ten days.

Research result and discussion :

Of the main group with an anamnesis of premature discharge of amniocentesis, prematurity diagnosis is given in table 1 below.

Classification of the main group of babies according to body weight b

Table 1

o	Babies the body weight by (grams)	Number of babies	In percentages
	2500-1499gr	19 people	63.3%
	1499-999gr	8 people	26.6%
	999-500gr	3 people	10%

Babies of the main group were determined in the following percentages by gestational age:

I. 10% up to 28 weeks

II. 8-31 weeks-26.6%

III.32-36 weeks -63.3%

Main group 6 (20%) of infants death did : 5 of them in the late neonatal period death from that two one up to 28 weeks has been period born extreme less weighty from the deadline first born babies the fact that was determined . They were born with intrauterine infection, respiratory distress syndrome, severe respiratory failure , prematurity . childbirth diagnosis and one in person intestines paresis , pneumonia complication with resuscitation in the department treated. Only 1 person (4 months old) died of kidney failure in early childhood. Conditional healthy in the group in babies development and scientist cases not observed .

Out of date first born of babies neurosonography dopplerography brain when done hypoxic ischemic changes were found in 95% . 1 person baby hypoxic from changes then children at 1 year old cerebral paralysis was determined.

Observed of babies main In the group , the mother of 14 babies had an intra-fetal infection (torch infections) treated) symptoms pregnancy during determined . 12 of them preeclampsia fetus inside of infection identified 5 of them only pregnancy preeclampsia disease It 's early birth face given by 4 people baby their mothers early birth the reason fetus of his companion from time early strength diagnosis with caesarean section cutting from the operation born pregnancy _ _ during fetus drop off danger in the background late _

18 (60%) of the babies of the main group were delivered by caesarean section, and 12 (40%) were delivered by physiological delivery.

Primary or secondary infertility was detected in the anamnesis of the mothers of the babies of the main group, and they were under the supervision of doctors many times during these pregnancy periods . lower than (3-5 points) was born with grade r , babies are slow to suck during the adaptation period , slow to respond to external influences, restlessness, respiratory disorder syndrome in different degrees 27=(90%) , jaundice is long convulsion syndrome8 (26.6%) was observed in n=18(60%) and the increase of bilirubin in the clinic was observed to be high for a long time (more than 30 days) despite treatment. In the conditionally healthy group, among these clinical indicators, only prolongation of jaundice

and shortness of breath syndrome were observed, and mild level of respiratory failure was observed. The rest of the main group did not have the indicated clinical manifestations. Compared with the group of preterm infants without signs of SMVI infection in the anamnesis, it was found that the infants of the main group needed resuscitation measures in 70% of cases. Also, during the adaptation period, slowness of suction, slow response to external influences, respiratory disorder syndrome, prolonged jaundice of various degrees, and excess or lack of water, turbidity, and in 2 cases, total dehydration for more than 18 hours were observed. born babies were identified. During the UTT examination, premature maturation or calcification of the placenta and symptoms of chorioamnionitis were detected in the anamnesis of 16 (53%) mothers of infants.

The general blood analysis of the main group of babies, obtained from laboratory analysis on 3-5 days, it was found that leukocytes in the main group were $13.02\pm1.12 * 10^9$/l high, and hemoglobin was 111.93±2.84g/l low (table 2) . no significant pathological changes were detected.

Table 2

general blood analysis (M ±m) of babies in the maternity hospital.

o	Indicators	The main group of infants (n=30)	Healthy babies group (n=20)	P
	leukocytes,10^9/l	13.02±1.12	8.12 ±1.1 2	< 0.001
	Neutrophils, %	5 3 ,83±3,19	5 0 .36±2.46	>0.5
	Lymphocytes, %	37.33±3.7	34.1±3. 23	>0.5
	Monocytes, %	10.28±1.02	9.23±0. 72	>0.2
	Eosinophils, %	1.15±0.24	1.61±0. 25	>0.1
	Basophils, %	0.18±0.03	0.11±0. 03	>0.1
	Hemoglobin , g/l	111.93±2.8 4	122.55± 2.74	<0.0 1
	Platelets, 10^9/l	271.7±18.6 9	221.79± 9.46	< 0.05
	Erythrocytes drowning speed , mm/s	4.2±0.61	3.08±0. 42	>0.1

Note: p –reliability of mean differences between infant groups.

Analyzing the biochemical composition of the blood, despite the compatibility of blood groups , the total amount of bilirubin was 77.55±4.37 μmol/l, urine 8.17 ±1.14 mmol/l , creatinine 129.67±24 ,82 μmol/l and the nitrogen balance was found to be increased in the main group (Table 3) .

Table 3

Indicators of blood biochemical analysis of babies (M ±m)

o	Indicators	The main group of infants (n=30)	Healthy group (n=20)	P
	ALT, Ed/l	36.44±2.05	22.73±0.78	< 0.001
	AST, Ed/l	77.84±7.18	42.45±1.58	< 0.001
	The amount of total bilirubin, µmol/l	77.55±4.37	51.09±2.3	< 0.01
	Directly bound bilirubin, µmol/l	4.79±0.36	6.39±1.18	> 0.1
	Indirectly bound bilirubin, µmol/l	62.74±4.09	58.08±8.38	> 0.5
	Nitrogen residue, mmol/l	23.15±2.44	17.85±0.53	< 0.05
	Urea in blood, mmol/l	8.17±1.14	4.14±0.20	< 0.05
	Creatinine in blood, µmol/l	129.67±24.82	46.23±1.83	< 0.05
	Uric acid, mmol/l	271.8±79.02	3.82±0.15	< 0.01
0	Alkaline phosphatase, ED	302.5±0.87	263.33±7.33	< 0.001

Note: p is a baby groups between indicators of differences i reliability.

When neurosonography examinations were analyzed, hypoxic-ischemic encephalopathy (GIE) changes in the basal and periventricular zones were found in 27 people, ventriculomegaly in 6 people, intracerebral hemorrhage in 8 people, mesistenia in 1 person, unchanged cases in 3 babies. In group II babies, the period of adaptation in the maternity hospital was easy, and only among the above problems, in the UTT examination, GIE changes in the basal and periventricular zones were detected in 9 children, ventriculomegaly in 1 child, and no changes were observed in the health of the rest of the children (tables 4, 5).

Table 4

Comparative characteristics of neurosonography indicators in newborns. (M±m).

o	Tested babies group . / Indicators _ _		Babies bo to mothers w SMVI n=30	Conditiona y healthy babie Group n=20	P
	Side anterior	On the right (0.2-0.3 cm)	0.418±0.124	0.3±0.000	r1≤0.05,

	ventricles the king depth	On the left (0.2-0.3 cm)	0.432±0.133	0.3±0.000	r1≤0.05,
	The depth of ventricular bodies	On the right (0.2-0.3 cm)	0.4487±0.172	0.300±0.000	R1≤0.05,
		On the left (0.2-0.3 cm)	0.425±0.185	0.300±0.000	r1≤0.05,
	III - ventricles (0.3-0.5 cm)		0.492±0.173	0.450±0.000	r1>0.5;
	IV - ventricles (0.3-0.5 cm)		0.462±0.111	0.460±0.000	r1>0.5

P1- healthy babies and main group between in indicators of differences reliability .

Table 5

Analytical indicators of brain neurosonography of infants

o	**Name of diseases**	**The main group of infants (n=30)**	**Conditional healthy babies group (n=20)**
	Basal and periventricular GIE changes in zones	27(90%)	9(45%)
	Ventriculomegaly	6 (20%)	1 (5%)
	Intracerebral hemorrhages	8 (26.6%)	1(5%)
	Mesiesthesia	1 (3.3%)	0 (0%)
	Without change	3 (10%)	11(55%)

Hypoxic changes (90%) and signs of hemorrhage (26.6%) were detected in the neurosonography of the main group of infants. In the maternity hospital, 18 of the main group of babies were diagnosed with perinatal damage of the central nervous system, of which 11 were diagnosed with agitation syndrome, 8 with convulsion syndrome and received standard treatment. Neurosonography at one month after birth verification analysis **It is** presented in table 6 **.**

6 tables

Indicator of diseases observed in catamnesis up to one year.

o	**1 of babies under the age of diseases**	**Main group of infants (n=30)**	**Healthy babies group (n=20)**
	With the nervous system related problems	13(43.3%)	1(5%)
	breath ways diseases	18(60%)	6(30%)
	Digestive problems	15(50%)	5(25%)

	Urine ways diseases	8(26.7%)	1(5)
	Jaundice stretching	10(33.3%)	2(10%)
	Died (from acute kidney failure)	1(3.3%)	0(0%)
	Cerebral palsy in children	1(3.3%)	0

From table 6 that's it thing It was found that SMVI with damaged from mothers born in babies breath ways and digestion to do system problems control to the group relatively two equal to many p met Nerve system problems (anxiety , convulsions , leg early catch not to get , external to secrets of the reaction slow answer to give such as complaints) control group 9-10 times high the fact that from the table too known be is standing Urine ways damage and physiological jaundice in the long run too one that's all high the fact that observed .

C children are often acute in the health of children of social group when the development catamenesis is observed breath ways diseases , pneumonia , diarrhea and urine ways diseases were observed. Group II babies had no problems with these health indicators. Mothers with SMVI in their mothers should undergo special examinations under the supervision of a doctor before pregnancy. At the same time, it is recommended to detect IgM and IgG antibodies to SMVI in the blood frequently during pregnancy, and it is recommended to take special treatment measures when the antibodies increase. This serves to prevent early and late complications of SMVI that can be observed in the fetus. Children diagnosed with SMVI should undergo frequent ultrasound examination of kidneys and general urinalysis twice a year in early childhood.

Conclusion: SMVI infection affects the body of pregnant women insensibly, as a result of the decrease of the mother's immune system, damage to the placenta, and the addition of additional diseases to the mother's body. can affect organs and systems and cause premature birth. Infants with SMVI have complications related to damage to the nervous system and other organs in early childhood.

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