

Feature of Ultrasound Examination in Children with Natural Injury of the Neck Spine

Djurabekova Aziza Taxirovna

Doctor of Medical Sciences, Prof. Head of the Department of Neurology and Neurosurgery
Samarkand State Medical Institute, Samarkand, Republic of Uzbekistan

Ergasheva Maftuna Ozodovna

Master student at the Department of Neurology Samarkand State Medical Institute, Samarkand,
Republic of Uzbekistan

According to literary sources, birth trauma is statistically more common than traumatic brain injury. Modern obstetric care is based on standard and qualified protocols, and if earlier during childbirth the main attention was focused on the woman in labor, at the moment the birth of a healthy child is a state priority (L). Despite this state of affairs, birth trauma is already one of the most common causes of death. Risk factors for birth trauma are diverse, including a large fetus, rapid labor, a functional narrow pelvis (etc.). Obviously, in all types of childbirth, the greatest impact falls on the fetal neck, in aggregate, on the passing vertebral arteries (1). Mechanical damage is subsequently manifested by secondary ischemization of neurons. The possibilities of diagnosing diseases of the nervous system in children have been expanded at the present stage. One of the leading methods of analysis, neurosonography, is the gold standard of its availability, an in-depth analysis of functional and structural changes in the brain in the early stages of brain formation in children. A great deal of experience has been accumulated in the use of ultrasound diagnostics of birth trauma of the central nervous system in children, for the assessment of normal and pathological anatomical structures (1). A great distance is caused by natal injuries in the craniovertebral zone of the spine, especially according to many studies, about 20% of birth injuries proceed unchanged on X-ray images. In accordance with this, only a comprehensive approach to the examination of this category of patients can provide significant assistance in the diagnosis and further treatment tactics.

Purpose. To study the peculiarity of ultrasound examination in children with natal injury of the cervical spine and correction of treatment with the use of the drug Cortexin in this category of patients.

Material and research methods. We examined 29 full-term babies for the period 2019-2021, from birth to 6 months, on the basis of the 1-Clinic SamMI in the departments of neonatology, pediatric intensive care and the pediatric neurological department. According to the age category, the children were divided into 3 groups. 1 group of 10 children in the maternity ward (up to 10 days from birth), 2 group of 10 children up to 3 months old, 3 group of 9 children up to 6 months of age. The study did not include premature infants with a comorbid background. Anamnesis of mothers (during pregnancy and childbirth) was studied in detail. Anamnesis of the first day of the child's life; the neurological status was studied in detail according to generally accepted methods for assessing the status of newborns and infants. Taking into account the suspicion of a birth trauma in the child, an X-ray of the skull and spine (cervical spine) was

performed in the examined children. All children were examined by neurosonography, scanning was performed in perpendicular frontal, sagittal and orasogital sections. Statistical processing was carried out on an individual computer.

Research result. The examined children were distinguished by a special syndromological picture. More than half of the children showed a decrease in activity (decreased muscle tone, lack of reflexes, weak cry), these signs were characterized as a syndrome of depression; oppression of reflexes, up to complete disappearance (Moro, Perez). A very characteristic manifestation in children at birth is a marble pattern of the skin. In the group of children under 3 months, convulsive syndrome was diagnosed (in 2 children). The neurological symptoms were dominated by intracranial hypertension syndromes, increased tone in all children, increased reflexes (asymmetry of the palpebral fissures, descending strabismus), and impaired cranial innervation. Clinical syndromes, in some cases, had a combination of increased neuro-reflex excitability (reaction to examination, sleep disturbance and wakefulness) in combination with an opposite physiological disorder (Fig. 1).

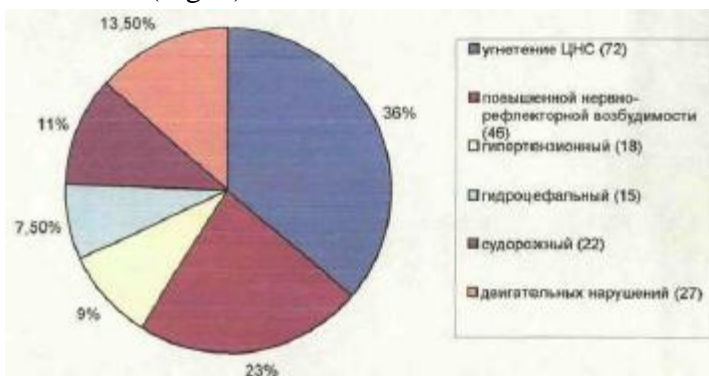


Fig. 3. Syndromic distribution of clinical manifestations of the examined children

In accordance with the purpose of the work, an X-ray of the cervical spine and skull was performed. The analysis of the images showed the C1-C2 displacement in 35%, the Atlantic joint subluxation in 20%, the C2-C3 arches convergence of 10% in the examined children. Purposeful study of the level of damage to the cervical spine and clinical syndromes revealed a relationship, so the syndrome of CNS depression is more often associated with damage to the upper cervical spine. At the same time, a motor disorder was diagnosed (Table 1).

Table 1
X-ray changes in the cervical spine in the examined children

X-ray manifestations	%	m
Subluxation of the Atlantic joint	24,0	±3,0*
C1-C2 offset	33,5	±3,3**
Approach to the base of the skull	5,5	±1,6
Asymmetry of the C2 spit	12,0	±2,2
Convergence of arcs C2-C7	15,0	±2,5***
Thickening of the periventricular soft tissue	2,0	±0,9
Deepening of zones of synchondrosis	0,5	±0,4
Stretch ShOP Syndrome	1,0	±0,7
Stretching the front contour	1,5	±0,8

* reliability between pi and p5 p <0.001

** reliability between p2 and p4 $p < 0.001$.

*** reliability between p14 and p15 $p < 0.01$

Several children older than 3 months (up to 6 months), that is, in group 3, underwent MRI (5 children). The reason for neuroimaging is persistent neurological syndromes, a history of post-resuscitation. The rest of the children showed a change in diffuse nature, the initial stage of cyst formation, subatrophy of the brain substance, expansion of the ventricles, which was regarded as internal hydrocephalus. When evaluating this research method, the same signs were noted as during neurosonography, thus, confirming the effectiveness of the neurosonography method (Table 2), one patient had leukomalacia (necrosis of the brain substance).

Table 2
Neurosonographic Changes in Children with Natal Trauma

Typical violations	%	m
Expansion of the subarachnoid space	8,5	$\pm 1,9^{***}$
Dilation of the lateral ventricles	14,5	$\pm 2,4^{**}$
Hemorrhage in the lateral ventricles	13,5	$\pm 2,4$
Choroid plexus hemorrhage	11,0	$\pm 2,2$
Dilation of the lateral ventricles	19,5	$\pm 2,8^{**}$
Dilation of the subarachnoid space	3,0	$\pm 1,2^{***}$
Choroid plexus cyst	2,0	$\pm 0,9$
Cysts of different brain structures	7,0	$\pm 1,8$
Periventricular leukomalacia (PVL)	0,5	$\pm 0,4$
Heterogeneous caudate nucleus head	1,0	$\pm 0,7$

* reliability between p9 and p10 $p < 0.001$

** reliability between p3 and p12 $p < 0.001$.

*** reliability between p2 and p13 $p < 0.001$

The result of neurosonographic studies was assessed in all examined patients. First of all, cerebral edema was noted. One hundred percent of children have a brain disorder. So, in 30% hemorrhage of various brain structures was diagnosed. Expansion of the ventricles of the brain to varying degrees, which indicates a poor prognosis. Children who were found to have periventricular hemorrhage suffered from depression syndrome. In cases of hemorrhage in the lateral ventricles, a connection was found with the syndrome of excitability and, in some cases, with convulsive syndrome.

Treatment of patients during the neonatal period and the first months of life requires an integrated approach and, at the same time, without polypharmacy. In accordance with this provision, the use of the drug cortexin, a biological polypeptide with nootropic, metabolic and neuroprotective properties, is proposed. All examined children were divided into 2 groups (A - with the addition of cortexin, B - traditional treatment, pantogam was used from nootropics). The analysis in comparison showed the effectiveness of the use of the drug Cortexin. Clinical improvement and indicators of neurological status increased. Normally, indicators of more than 50% approached, at the same time, in group C, only 30% of cases stopped regurgitation and vomiting syndrome, compensated for hypertensive-hydrocephalic syndrome with diuretics in group A. In group B, diuretics were needed. A neurosonographic study of the dynamics against

the background of cortixin showed a decrease in the size of the cystic cavities. The same positive changes were found in relation to periventricular hemorrhage. In group B, these structures remained unchanged. And as a result, it should be noted that there are no side reactions during treatment with Cortixin.

Conclusions;

1. For children who have undergone natal trauma of the cervical spine, the syndrome of oppression is characteristic, if the process is detected at the level of the upper part, the syndrome of excitement and movement disorders are associated with damage to the lower part of the cervical vertebrae.
2. Violation of the ultrasound picture of the brain was noted in all cases of the surveyed contingent of children, more often it was edema and hemorrhage in various structures of the brain.
3. The efficacy of Cortixin application in children with natal trauma, in particular depression and convulsive syndrome, has been revealed.

LITERATURE :

1. Garbuz I.F., Garbuz A.I. Natal injuries of the cervical segment of the spine, causes and clinical signs // Journal
2. International Journal of Applied and Basic Research. - 2013. - No. 9 - P. 27-28
3. Birth injury to the child's neck: diagnosis, causes, treatment // <http://www.vertebrolog.ru/>
4. Mikhail V.B., Mikhail V.R., Natalia V.I., Galina Yu.A. Natal injuries of the cervical spinal cord // Siberian medical journal (Irkutsk), 2015, No. 7, p. 14-18
5. Natal trauma of the cervical spine // <http://www.ipm-kids.ru/>
6. Nielsen L., et al. Antecedents of Neonatal Encephalopathy in the Vermont Oxford Network Encephalopathy Registry // Pediatrics. 2012. Vol. 130. P.878-886.
7. Classification of perinatal lesions of the nervous system in newborns: Guidelines / Ministry of Health of Russia. M., 2000. –40 p. 2.
8. Classification of perinatal lesions of the nervous system and their consequences in children of the first year of life: Methodical recommendations. - M.: FGOU "VUNMTs Roszdrav", 2007. - 88 p.
9. Barkovich J. Pediatric Neuroimaging, 4th Edition. - Williams & Wilkins, 2005. -- 918 p.
10. Caird M., Reddy S., Ganley T., Drummond D. Cervical spine fracture-dislocation birth injury: prevention, recognition, and implications for the orthopedic surgeon // J Pediatr Orthop. - 2005. - Vol. 25. No. 4. - P.484-490
11. Vorotyntseva NS, Nikulshina - Zhikina LG, Kurtseva ES. Clinical and radiation diagnostics of perinatal neck injury and its consequences in children // Kursk scientific and practical bulletin "Man and his health", 2015, No. 4, p. 14-19
12. Djurabekova A., Gaybiyev A., Igamova S., Utaganova G. - Neuroimmunological aspects of pathogenesis in children's cerebral palsy. // International Journal of Pharmaceutical Research | Jan - Mar 2020 | Vol 12 | Issue 1 Research Article R. 1264-1270
13. Utaganova G., Djurabekova A., Khamedova F., Bazarova A., Igamova S. - Cognitive dysfunction in children with pain syndrome during the neonatal period. // International Journal of Pharmaceutical Research | Jul - Dec 2020 | Vol 12 | Supplementary Issue 2