HEALTH OF NEUROMUSCULAR DEVELOPMENT OF A NEWBORN DURING CAESAREAN SECTION, A MODERN VIEW

Safoeva Zebo Farkhotovna
Samarkand State Medical University,
Republic of Uzbekistan, Samarkand
e-mail:safoeva90@gmail.com
Abduvokhidova Aziza Akmalovna
Student of Samarkand State Medical University.
Republic of Uzbekistan, Samarkand
e-mail:abduvahidovaaziza88@gmail.com
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Abstract. This article provides an analysis of the literature data concerning the rate of spread, diagnosis, problems of operative delivery and neurological health of children. Premature newborns have a high rate of hypoxic-ischemic lesions of the central nervous system and intraventricular hemorrhages (IVF), which are the main causes of mortality in the early neonatal period and disability in subsequent years. Early neonatal mortality because of birth trauma is 9.8 per 1000 newborns. Despite a significant number of studies, these publications need further study and research by specialists of related disciplines: obstetricians-gynecologists, neurologists, neonatologists, anesthesiologists-resuscitators.
Keywords: newborns, hypoxic-ischemic encephalopathy, caesarean section.

The condition of the fetus and newborn mainly determines by the anatomical and physiological characteristics of the mother, her health, the flow of pregnancy and childbirth. In modern medicine, hypoxia holds a leading position among the causes of death and invalidity of children. Thus, in the structure of children's disability, injuries of the nervous system account for about 50%, while diseases of the nervous system leading to disability and maladaptation of children in 70-80% of cases cause by perinatal factors.

The conducted neurophysiological studies (electroneuromyography) demonstrate that there are significant disorders and changes in the functional structure of reflexes during pathological childbirth. During caesarean section, many factors affect the condition of children at birth. Such factors are the condition of the fetus before surgery, the condition of the mother, the effect of anesthesia, the duration of the operation before fetal extraction from the uterus, difficult fetal extraction.

Premature birth is one of the main causes of morbidity and mortality of newborns - early neonatal mortality in premature infants reaches 60-70%, infant mortality - 60-75%. Early neonatal mortality because of birth trauma is 9.8 per 1000 newborns. Delivery through the natural birth canal is justified with the preservation of the fetal bladder, the normal size of the pelvis, the expected rapid delivery and the absence of pronounced risk factors. In such cases, if the estimated fetal weight is < 1500 g or the gestation period is less than 32 weeks, cesarean section is preferable.

In addition to pregnancy complications, important criteria in determining the rationality of cesarean section surgery are fetal weight, type of presentation and gestation period. It proves that the perinatal mortality by caesarean section at 28-32 weeks was 8 times greater than at 33-37 weeks. Many authors confirm the insufficiency of compensatory brain functions in newborns extracted by Caesarean section before the onset of labor.

Most authors claim that operative fetal extraction with breech presentation contributes to a significant reduction in the incidence of mortality and severe neurological complications in premature infants. At the same time, the estimated weight of the fetus is of great importance because the morbidity, especially injuries, and mortality of newborns are higher the lower the body weight at birth. A number of publications express the opinion that with a breech presentation of the fetus, planned operative delivery is justified in any case, regardless of the estimated weight, gestation period, and contributes to a better outcome in children.

The most favorable perinatal outcomes observe during CS in a planned manner, in comparison with urgent operative delivery and natural childbirth. Isenaliev Z.G and co-author found no differences between the two groups in the frequency of respiratory distress syndrome, severe VVC, convulsive states, sepsis and mortality, regardless of birth weight and gestational age. The delay in intrauterine development was a negative factor affecting the survival of the newborn.

In premature infants after abdominal delivery, conditions often create to reduce the volume of circulating blood and characteristic hemodynamic disorders in the form of bradycardia and arterial hypotension observe. According to some authors, when examining the fundus of newborns, retinal hemorrhages of varying severity were detected in 14% of children born by caesarean section, and in 86% of children born naturally.

Carrying out an operative delivery reduces the percentage of morbidity and mortality, but still does not exclude the possibility of birth trauma of the newborn when it removes from the uterine cavity. According to their research, despite the high prevalence of pathology, in most children during the newborn period, all pathological syndromes underwent regression against the background of therapy during the first year of life.

Children over 6 years old have a high infectious index, 56% of children born by caesarean section often suffer from colds and have one or more chronic diseases. Two from three of the children classify as at risk, every fifth child has chronic diseases in the compensation stage.

Detection of fetal dysfunction, on the one hand, can serve as an indication for cesarean section surgery, and on the other - a contraindication, since with severe hypoxia and a low probability of having a viable child, abdominal delivery is impractical. Determining the "potential viability" of the fetus plays a crucial role in the outcome of the newborn. Often an unfavorable outcome is because newborns are assessed as "unviable" and do not receive adequate care.

A comparative analysis of the morbidity of newborns with a normal pregnancy after natural and operative childbirth showed that the majority of children born by CS had Apgar scores below 4 points at 1 minute, and they more often needed resuscitation and respiratory support.

In the study of Salikhov K. Sh, the incidence of asphyxiation in post-natal infants during spawning at gestation periods of 30 to 36.6 weeks was significantly higher than after cesarean section. Severe and moderate degree of asphyxia noted in 48% of newborns during spontaneous delivery, and in 19% of those born by caesarean section. Palchik, A. B. (2011) studied the condition of newborns born surgically in conditions of physiologically occurring pregnancy and with chronic hypoxia. A comparative analysis of the level of catecholamine in the blood of umbilical vessels and hemodynamic adaptation of newborns after natural childbirth and cesarean section showed that the stability of the cardiovascular system of the groups were comparable, despite the fact that the level of adrenaline and norepinephrine in the blood of children of the first group was significantly higher.

In premature infants after abdominal delivery, conditions often create to reduce the volume of circulating blood and characteristic hemodynamic disorders in the form of bradycardia and arterial hypotension observe.

Thus, we are talking about perinatal morbidity not after cesarean section, but despite cesarean section. This problem requires further study and research by specialists of related specialties: obstetricians-gynecologists, neurologists, neonatologists, anesthesiologists-resuscitators.

Hypoxic-ischemic encephalopathy, classification and terminology issues

The perinatal period considers the period from 28 weeks of pregnancy to the 1st week of the child's life.

According to the definition of the WHO Committee of experts, encephalopathies are transient and unclassified brain conditions of non–inflammatory origin. This term accepts all over the world. Classification allows to determine the predominant level and etiology of the lesion (hypoxic, traumatic, mixed; level - encephalopathy, myelopathy, encephalomyelopathy), the period of the disease and the leading clinical neurological syndrome, on which the post-syndrome therapy depends.

The use of modern technologies in perinatal practice has made it possible to clarify the etiology, pathogenic mechanisms, clinical and morphological structure, to develop common approaches to terminology and to develop a classification of perinatal lesions of the nervous system of newborns. This classification provides for the division of neurological disorders of the newborn period into four main groups, depending on the leading mechanism of damage: hypoxic, traumatic, toxic-metabolic and infectious.

Hypoxic lesions of the nervous system include cerebral ischemia of 3 degrees of severity, intracranial hemorrhages of hypoxic genesis, as well as combined ischemic and hemorrhagic lesions of the central nervous system of non-traumatic genesis. Many authors have described traumatic lesions of the perinatal nervous system. There is evidence of the effects of drugs on the brain of the fetus or newborn.

The defeat of the central nervous system in infectious diseases of the perinatal period is divided into the defeat of the central nervous system in intrauterine infections (TORCH syndrome), as well as the defeat of the central nervous system in neonatal sepsis.

Fundamentally new in the classification is the division of hypoxic brain damage into cerebral ischemia and intracranial hemorrhages. The further growth and development of children in the first year of life who have suffered perinatal lesions of the nervous system reveals various variants of neurological outcomes, varying between complete recovery, transient (transient) forms and persistent (organic) defects.

By the beginning of the XXI century, thanks to significant achievements in the field of perinatal neurology, the emergence of highly informative methods of studying the central nervous system, allowing identifying various pathological conditions at the earliest possible time.

Conclusion. Thus, there is no unified position regarding the state of health of children born by operative delivery. According to leading obstetricians and gynecologists dealing with the problem of operative delivery, there is not enough information about the neurological health of children, which does not allow us to answer the question with certainty which of the methods of delivery is less traumatic for the fetus. This problem requires further study and research by specialists of related specialties: obstetricians-gynecologists, neurologists, neonatologists, anesthesiologists-resuscitators.

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