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PATHOMORPHOLOGY OF FETUS ASPHIXIA

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Summary
The article is devoted to a review of the state of the issue of pathomorphological changes in neonatal asphyxia. Based on the analysis of extensive literature, it has been shown that morphological science and dissecting practice urgently require the expansion of diagnostic capabilities in the study of corpses of fetuses and newborns in order to reliably resolve questions about the cause of their death and their birth alive or dead. Many articles and dissertations by international scientists were analyzed, which were based on various books, dissertations, as well as electronic journals.

Key words: neonatal asphyxia, pathomorphology, fetal hypoxia.

ПАТОМОРФОЛОГИЯ АСФИКСИИ ПЛОДА

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Резюме
Статья посвящена обзору состояния вопроса о патоморфологических изменений при асфиксии новорожденных. На основе анализа обширной литературы показано, что морфологическая наука и прозекторская практика настоятельно требуют расширения диагностических возможностей при исследовании трупов плодов и новорожденных для достоверного решения вопросов о причине их смерти и их рождении живыми или мертвыми. Было проанализировано множество статьей и диссертаций международных ученых, в основе которых были различные книги, диссертации, а также электронные журналы.

Ключевые слова: асфиксия новорожденных, патоморфология, гипоксия плода.

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HOMILA ASFIKSIYASI PATOMORFOLOGIYASI

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Annotatsiya
Maqola neonatal asfiksiyadagi patomorfologik o'zgarishlar holatini ko'rib chiqishga bag'ishlangan. Keng ko'lamli adabiyotlar tahlili asosida shuni ko'rsatdiki, morfologiya fani va kesish amaliyoti homila va yangi tug'ilgan chaqaloqlarning o'lim sabablari va tirik tug'ilishi haqidagi savollarni ishonchli hal qilish uchun ularni o'rganishda diagnostika imkoniyatlarini zudlik bilan kengaytirishni talab qiladi. yoki o'lik. Xalqaro olimlarning ko‘plab maqola va dissertatsiyalari turli kitoblar, dissertatsiyalar, shuningdek, elektron jurnallar asosida tahlil qilindi.

Kalit so'zlar: neonatal asfiksiya, patomorfologiya, xomilalik gipoksiya.

Relevance

According to the WHO, more than 5 million cases of perinatal death are registered every year in the world, including 2.7 million neonatal deaths and 2.6 million stillbirths [5]. Most of these deaths are preventable [Bhutta ZA, Das JK, Bahl R, et al., 2014], and elimination of preventable neonatal deaths and stillbirths remains one of the main goals of international health efforts [World Health Organization; 2014].

Asphyxia (asphyxia; Greek a- negation + phyxis pulse) is a pathological condition of increasing suffocation, characterized by a sharp lack of oxygen and an excess of carbon dioxide in the body. Depending on the causes and mechanisms of development, intrauterine, primary and secondary asphyxia are distinguished. Prenatal and primary include asphyxia of the fetus and newborn. Secondary asphyxia includes the following varieties: mechanical asphyxia, asphyxia from a lack of oxygen in the inhaled air, asphyxia as a result of damage to the nervous system, asphyxia that develops during prolonged spastic conditions, asphyxia of a reflex nature, as well as secondary asphyxia of a newborn. Asphyxia of the fetus and newborn is one of the most common pathologies in childbirth, which can be: intrauterine (occurs during the intrauterine period); primary (occurs at the time of birth, in 5-7% of newborns); secondary (develops in the first day of a baby's life).

The basis of the intrauterine form of asphyxia is the oxygen starvation of the fetus. It can be caused by: violations of the uteroplacental circulation (toxicosis of pregnant women, pathology of the placenta), maternal diseases accompanied by oxygen starvation (cardiovascular and pulmonary pathology, acute blood loss, shock),

compression of the umbilical cord, long anhydrous period, protracted and pathological childbirth. As a result of the onset of oxygen starvation, an excess amount of carbon dioxide accumulates in the blood of the fetus. This leads to excitation of the respiratory center, the appearance of premature respiratory movements, aspiration of amniotic fluid by the fetus, followed by blockage of the airways.

With prolonged oxygen starvation in the body of the fetus, deep metabolic, structural and functional disorders of organs and systems occur: acidosis develops, severe circulatory disorders appear, hemorrhages in the brain, lungs and other organs. The initial excitation of the respiratory center is replaced by its paralysis. Irreversible changes occur in the central nervous system.

Violation of the fetal cardiac activity manifests itself in the form of tachycardia or bradycardia, arrhythmias, deafness of tones. The behavior of the fetus becomes restless, the anal sphincter relaxes and the amniotic fluid stains with meconium. As asphyxia increases, heart sounds become rare and muffled. Fetal movements slow down and then stop completely. The outcome of intrauterine asphyxia may be the death of the fetus before childbirth, during childbirth, or the birth of a child in a state of asphyxia.

Risk factors for the development of primary asphyxia are intrauterine hypoxia (acute or chronic); intracranial birth trauma of a child; immunological incompatibility of mother and fetus; complete or partial blockage of the child's airways with amniotic fluid or mucus; extragenital diseases of the mother during pregnancy; pathological course of pregnancy; abnormalities of labor activity (pathologically narrow pelvis of the mother, improper insertion of the fetal head, in some cases entanglement with the umbilical cord).

Among the causes of secondary asphyxia are: congenital pneumonia in a child; violation of cerebral circulation; inhalation of vomit; violation of the central nervous system of the baby. [N.V. Polutova, et al., 2017].

Asphyxia of the fetus and newborn (P20, P21).

Fetal asphyxia (intrauterine asphyxia) in most cases is the result of: 1) acute cessation of uteroplacental or placental-fetal circulation; 2) manifestations of various fetopathy of infectious and non-infectious genesis. Fetal asphyxia as the underlying disease can only be considered in cases of stillbirth. It is mandatory to specify the period of its onset: antenatal (P20.0) or intrapartum (P20.1). Asphyxia of a newborn is a pathological condition caused by the failure of the child to breathe independently. Violation of the act of spontaneous breathing can be observed at the birth of a child in a state of hypoxia or without it and increase in the first hours and days of extrauterine life. In newborns, regardless of body weight and gestational age, it is necessary to

avoid assessing the identified asphyxia as the underlying disease and continue searching for its substrate, which is most often pneumopathy, residual effects of intrauterine asphyxia, malformations of the lungs, heart, infections. These types of pathology should be regarded as the main disease of the newborn, while asphyxia should be recorded as a fatal complication and coded as P21. In cases of fetal asphyxia in case of artificial termination of pregnancy for medical reasons on the part of the mother, antenatal asphyxia (P20.0) is indicated as the main disease, and the pathology of the mother is coded according to the disease that she has that caused the termination of pregnancy. In the case of artificial termination of pregnancy according to indications from the fetus, the fetal disease that served as the reason for the termination of pregnancy should be indicated as the main disease, and provoked asphyxia should be considered a complication and the immediate cause of death. Respiratory disorders characteristic of the perinatal period (pneumopathies). Respiratory distress syndrome (RDS), or "respiratory distress syndrome" (RDS) of the newborn, is a respiratory disorder in children in the first days of life, caused by lung immaturity and primary surfactant deficiency. The incidence of SDR is higher, the lower the gestational age and body weight of the child at birth. At the same time, pneumopathy is determined pathoanatomically, which are included in the headings: “Hyaline membrane disease” (P22.0), “Primary atelectasis of the newborn” (P28.0), “Pulmonary bleeding” (P26). These conditions are more common in preterm infants with congenital infection. In these cases, the infection should play the role of the underlying disease, and pneumopathy - complications. According to P.A. Samokhina, T.A. Del [2003], only “non-infectious” or unspecified pneumopathies can claim to be the equivalent of a nosological unit and be the original cause of death (the underlying disease). All forms of pneumopathies, as a rule, are complicated by asphyxia of the newborn, which should be considered already as a cause of immediate death [Avtandilov GG, Zayratyants O.V., Kaktursky L.V., 2004].

In newborns with severe intranatal asphyxia, there is a violation of the adaptation of the hemostasis system, and therefore they have a high risk of bleeding during the first day of life. We conducted a retrospective analysis of the case histories of 40 newborns born with severe asphyxia (group 1) and 20 “healthy” newborns (group 2). The study was carried out during the first hour of life of newborns based on the use of the method of thromboelastography.

Thromboelastographic study of native blood showed a shift in the hemostasis system towards hypocoagulation, both platelet and enzymatic parts of hemostasis, without changes in the processes of clot lysis in newborns born with severe asphyxia. [I.E. Golub, et al., 2017].

The main causes of death of newborns in the perinatal period in the Aral Sea region were: pneumopathy (P22-P28) (hyaline membrane disease, pulmonary atelectasis, aspiration syndrome) - in 62.2%; perinatal damage to the central nervous system (P008-P009) - 11.2%; congenital malformations were detected in 11.2%; birth trauma (P10-P15); intraventricular and subarachnoid hemorrhages were found in 6.1%. The dead newborns were premature in 83.6%, combined with IUGR in 40%. The main nosological form in deceased premature newborns was pneumopathy (primary atelectasis and hyaline membrane disease) - 71.8%. The predominant nosological form in stillbirth was antenatal hypoxia (asphyxia) of the fetus, mainly due to somatic pathology of pregnant women, pathology of pregnancy and the development of decompensated CRF, of which premature stillborns accounted for 80% of cases, including those with IUGR in 21% of cases. [Orynbasarov, Serik Orynbasarovich, 2015].

It is known that 25-80% of premature babies develop respiratory disorders in the early neonatal period, which determine the severity of the condition of children and unfavorable outcomes (G. M. Dementieva, 2004; B. I. Glukhovets, I. V. Gaivoronsky, 2005).

However, the issues of perinatal losses in ecologically unfavorable regions, as well as pathomorphological manifestations of lung diseases in fetuses and newborns, the role of various environmental factors in the pathogenesis of lung pathology, remain unexplored to date.

Figure 1. Macroscopic view of the lung

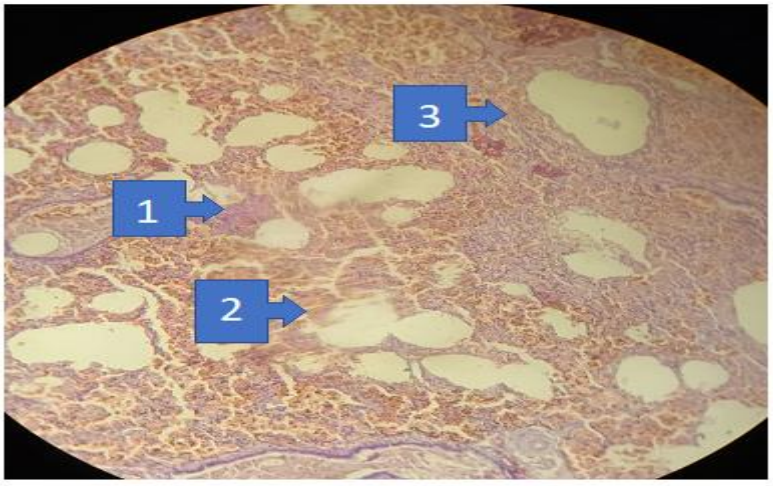

Figure 2. Microscopic view of the lung. 1. Hyaline menbran. 2. Hemorrhage. 3. Edema and inflammatory infiltrate

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