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"MODERN ASPECTS OF FORECASTING AND EARLY DIAGNOSIS OF FETAL HYPOXIA TO REDUCE THE PERINATAL INCIDENCE OF HYPOXIC- ISCHEMIC GENESIS"

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Annotation
In the modern world, the problem of ischemic and hypoxic brain damage in newborns remains an urgent problem, since intrauterine brain suffering subsequently leads to serious complications leading to an increase in perinatal mortality and disability in children. In children born with ischemic brain lesions, there is a high mortality, and in the structure of early childhood disability, this pathology is 60-70%.

Keywords: Hypoxic brain damage, ischemic brain damage, cerebrovascular diseases, hypoxic-ischemic encephalopathy, fetal hypoxia.

Introduction

According to WHO, about 25% of children suffer from neuropsychiatric disorders, among their causes this pathology is 70-80%, and therefore the problem of ischemic damage to the fetus remains an urgent problem in obstetrics and perinatology (Гнатко Е.П 2015г., ПангР. 2020.,).

Hypoxic-ischemic encephalopathy (HIE) is a collection of neurological symptoms that develop in newborns as a result of impaired uteroplacental and fetal blood flow during gestation and intrauterine development of the fetus. The main conditions under which this pathology develops are intrauterine fetal hypoxia, low Apgar score of newborns after birth, metabolic acidosis. (ЛедяйкинаЛ.В.2015., Ульянина Е.В.2016.,).

For the prediction and early diagnosis of this complication, the determination of the parameters of regional hemodynamics - the interatrial septum of the blood flow, the study of pro- and anti-inflammatory cytokines released in the central nervous system by microgia, are of great importance, since they are a regulatory system of mediators that control the processes of proliferation and differentiation of cellular elements in the hematopoietic , immune and other homeostatic systems of the body (Ледяйкина Л.А 2016, Стародубцева Н.Л 2022,).

Predictive markers of perinatal pathology, the cytokine status of a newborn in umbilical cord blood, as the main factor in reducing innate immunity and their correlation features with indicators of fetal blood flow, especially brain blood flow, and with parameters of the hemostasis system, have not been deeply studied and determined.

Monitoring of the most important indicators of maternal systemic hemodynamics and regional utero-placental-fetal blood flow, determination of immunological and inflammatory markers with sufficient credibility reveals preclinical manifestations of fetal and newborn brain circulatory disorders, creates the possibility of predicting outcomes and orienting in the results of therapy.

On the basis of modern informative methods for diagnosing fetal regional blood flow, determining immunological and inflammatory markers in the umbilical cord blood of a newborn, new opportunities are being created to consider this problem of perinatology - tactics of management, selection of adequate therapy and delivery as the main lever for reducing HIE and disability of the future generation.

The degree of knowledge of the problem.

The problem of ischemic damage to the brain of the fetus and newborn remains an urgent problem in perinatology. the frequency of occurrence of this pathology in the United States is 2-4 children per 1000 births, and in Russia it varies from 15.6 to 38 per 1000 full-term newborns, and today many pathogenetic mechanisms for the development of hypoxic-ischemic encephalopathy have been studied.

Many scientific researchers have studied hemodynamic relationships in the dynamics of pregnancy complications and their role in the development of fetal cerebral blood flow disorders and in the formation of HIE in newborns. And having an inextricable link between the hemodynamic system mother - placenta - fetus with periods of development of the entire fetoplacental complex and its nature of blood flow is the basis for the development of HIE (Гансбургеский А.Н 2015, Анурьев А.М. 2019.,).

To date, many pathogenetic mechanisms for the development of HIE have been studied, including the role and significance of cytokines and their balance with the severity of ischemic brain lesions. (Ульянина Е.В., 2018, Панченко А.С 2020.).

An adequate assessment of the state of blood flow in the fetal brain, the determination of its early diagnostic markers for the choice of pregnancy management, and the treatment of these conditions remain poorly understood. It should be noted that there are no unified diagnostic and therapeutic approaches to this condition, action algorithms to date. The most promising studies are the Doppler assessment of blood flow in interatrial septum of the heart, the study of the hemostasis system,

immunological factors and their correlation for the prediction and early diagnosis of HIE in newborns and the choice of adequate early these pathogenetic therapy.

Purpose of the Study:

To evaluate the role of hemodynamic and immunological markers in the prediction and early diagnosis of fetal hypoxia in order to reduce perinatal morbidity and mortality.

Research Objectives

1. Determine the risk groups for the development of fetal hypoxia and develop a phased individualized approach to pregnancy management.
2. To establish the significance of early hemodynamic, immunological and hemostatic diagnostic markers in predicting the development of fetal hypoxia in order to select the optimal methods of therapy with subsequent evaluation of their effectiveness.
3. To assess the role of delivery methods in fetal hypoxia and in the development of staging of clinical symptoms of hypoxic-ischemic encephalopathy in newborns.
4. To study the effects of fetal hemodynamic disorders, the hemostasis system on the immune status of newborns, as a predictive factor for the formation of HIE in newborns, and to introduce into practice a set of diagnostic and therapeutic measures aimed at reducing perinatal morbidity and mortality.

Material and Methods

In accordance with the goals and objectives of the work, a survey of 100 women will be conducted. The scientific search program will be implemented on the basis of the Bukhara Perinatal Center and the Maternity Complex of the Bukhara region, together with the Department of Obstetrics and Gynecology No.2 of the Bukhara State Medical Institute. Common laboratory and instrumental methods for diagnosing and coagulation system (fibrinogen, platelets, PI, activated partial thromboplastin time, D-dimer), clinical and biochemical analyzes (C reagent protein, complete blood count, urine), immunological pro- and anti-inflammatory cytokines (IL-6, IL-10 and tumor necrosis factor) in the cord blood of newborns.

Of the functional diagnostic methods, dopplerometry of the vessels Fetoplacentar complex and ultrasound placentometry and fetometry will be used. Morphological study of the placenta will also be carried out.

100 birth histories and developmental histories of newborns who were diagnosed with a perinatal disease of hypoxic-ischemic origin will be retrospectively studied in order to determine the risk group for perinatal pathologies of newborns. An in-depth study

will be conducted on a contingent of 100 women at risk for the development of fetal hypoxia, including 30 patients with a physiological course of pregnancy and childbirth (1st control group), the main prospective group will be 70 patients, of which 35 pregnant women will be registered at the end of the second trimester of pregnancy, those who did not receive appropriate preventive therapy (group 2) and group 3 will be patients who were registered from early pregnancy and underwent a comprehensive study in a timely manner and received therapy aimed at preventing fetal hypoxia.

All examinations of women will be carried out at the Research Institute of Immunology, the Bukhara Perinatal Center, the maternity complex of the Bukhara region, together with the Department of Obstetrics and Gynecology No. 2 of the Bukhara State Medical Institute.

To study the main indicators of biochemical, immunological and hemostasis systems, samples of the mother's blood serum will be used, the structural and functional features of the placenta will be determined by ultrasound and the hemodynamics of the mother and the atrial septum of the system by Doppler methods of research. Cord blood serum will be used for immunological research. Morphologically, the placenta after childbirth will be examined.

Results and Discussion

(Supposed scientific novelty of the study.)

The risk factors for the development of fetal hypoxia, the frequency of occurrence of hypoxic-ischemic brain damage in newborns and the course of perinatal diseases will be determined.The significance of a comprehensive study of indicators of maternal central hemodynamics, regional PU, PF and fetal blood flow for assessing early manifestations of fetal circulatory disorders was determined.

The role and significance of early markers of fetal immune status disorders in the preclinical diagnosis of hypoxic-ischemic encephalopathy will be determined and neonatologists will be recommended to choose early rehabilitation therapy with an assessment of its effectiveness. The role of maternal and fetal circulatory disorders, the hemostasis system in the formation of fetal hypoxia and a decrease in the immune status of newborns as a factor in the development of HIE in newborns and the need to address issues of their rehabilitation will be assessed.

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