ADJUSTABLE DETERMINANTS OF PERINATAL CENTRAL NERVOUS SYSTEM DAMAGE IN NEWBORNS IN CONTEMPORARY SETTINGS

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ABSTRACT

Relevance. In recent years, the problem of perinatal central nervous system hypoxia has become particularly relevant. **Purpose:** to determine the prognostic role of some risk factors for hypoxic encephalopathy in newborns in the Samarkand region. **Materials and methods:** 80 newborns with moderate and severe perinatal CNS damage were examined: The first group consisted of 40 newborns with moderate perinatal CNS damage of hypoxic origin; the second group consisted of 40 newborns suffering from a similar pathology of a severe form. The control group of our study included 30 healthy newborns. General clinical examination of patients included: detailed collection and analysis of anamnestic data (obstetric assessment of the course of the ante-, intra- and perinatal periods). **Results:** our analysis of relative risk indicators (RR) in newborns of the main and control groups allows us to conclude that the modifying risk factors for moderate-severity perinatal encephalopathy are multiple abortion risks during this pregnancy, preeclampsia, moderate-severity anemia, acute laryngitis, and urogenital tract pathology. Modifying factors of severe perinatal hypoxic encephalopathy are the presence of stillborn children in the woman's history, the father's smoking, the mother's excess weight and obesity, the presence of chronic infection foci in the body, and infectious bacterial pathology.

Key words: newborns, risk factors, perinatal encephalopathy, relative risk, reliability

ZAMONAVIY SHAROITLARDA YANGI TUG'ILGAN CHAQALOQLARDA PERINATAL MARKAZIY ASAB TIZIMI ZARARLANISHINING O'ZGARUVCHAN OMILLARI

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ANNOTATSIYA

Dolzarbligi. Yangi tug'ilgan chaqaloqlar markaziy asab tizimining perinatal shikastlanishlari yangi tug'ilgan chaqaloqlar patologiyasi tarkibida muhim o'rin tutadi. **Maqsad:** zamonaviy sharoitlarda yangi tug'ilgan chaqaloqlarda ensefalopatiyalarning xavf omillarini aniqlash. **Materiallar va usullar:** MNT ning o'rtacha va og'ir perinatal shikastlanishi bo'lgan 80 nafar yangi tug'ilgan chaqaloqlar tekshirildi: I guruh gipoksik genezli MNT ning o'rtacha perinatal shikastlanishi bo'lgan 40 nafar yangi tug'ilgan chaqaloqlardan, II guruh gipoksik genezli MNT ning og'ir perinatal shikastlanishi bo'lgan 40 nafar yangi tug'ilgan chaqaloqlardan, nazorat guruhi esa 30 nafar sog'lom yangi tug'ilgan chaqaloqlardan iborat edi. Bemorlarning umumiy klinik tekshiruvi quyidagilarni o'z ichiga oldi: anamnestik ma'lumotlarni batafsil yig'ish va tahlil qilish (akusherlik- ante-, intra- va perinatal davrning kechishini baholash). **Natijalar:** asosiy va nazorat guruhidagi yangi tug'ilgan chaqaloqlarda nisbiy xavf ko'rsatkichlari (NX) tahlili shuni ko'rsatdiki, o'rtacha og'irlikdagi perinatal ensefalopatiya rivojlanishining modifikatsiyalovchi xavf omillari homila tushishi xavfi, toksikoz, onaning 35 yoshdan oshganligi, o'rtacha og'irlikdagi kamqonlik, yuqori nafas yo'llarining o'tkir infeksiyalari va ginekologik patologiya hisoblanadi. Shuningdek, biz og'ir perinatal ensefalopatiya rivojlanishining modifikatsiyalovchi xavf omillari o'lik tug'ilish, otadagi zararli odatlar, yaqin qarindosh nikoh, semizlik, surunkali infeksiya o'choqlari, o'tkir bakterial yuqumli kasalliklar va urogenital infeksiya ekanligini aniqladik.

ИЗМЕНЯЕМЫЕ ДЕТЕРМИНАНТЫ ПЕРИНАТАЛЬНОГО ПОВРЕЖДЕНИЯ ЦЕНТРАЛЬНОЙ НЕРВНОЙ СИСТЕМЫ У НОВОРОЖДЁННЫХ В СОВРЕМЕННЫХ УСЛОВИЯХ

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АННОТАЦИЯ

Актуальность. В последние годы проблема перинатальной гипоксии центральной нервной системы приобретает особую актуальность. **Цель:** определить прогностическую роль некоторых факторов риска энцефалопатий гипоксического генеза у новорожденных в Самаркандской области. **Материалы и методы:** Обследование подвергнуты 80 новорожденных со среднетяжелым и тяжелым перинатальным поражением ЦНС: I группу составили 40 новорожденных со среднетяжелым перинатальным поражением ЦНС гипоксического генеза, во II группе наблюдали 40 новорожденных, страдающих аналогичной патологией тяжелой формы. В контрольную группу нашего исследования вошли 30 здоровых новорожденных. Общеклиническое обследование пациенток включало: детальный сбор и анализ анамнестических данных (акушерско-оценка течения анте-, интра-и перинатального периода). **Результаты:** наш анализ относительных показателей риска (ОР) у новорожденных основной и контрольной групп позволяет сделать вывод, что модифицирующими факторами риска перинатальной энцефалопатии среднетяжелой выраженности являются

множественные риски выкидыша в течении данной беременности, преэклампсия, анемия средней степени тяжести, острый ларингит и патология урогенитального тракта. Модифицирующими факторами тяжело выраженной перинатальной гипоксикоэнцефалопатии выступают наличие в анамнезе женщины мертворожденных детей, курение отца, избыточный вес и ожирение у матери, наличие в организме хронических очагов инфекции, инфекционная бактериальная патология.

Ключевые слова: новорожденные, модифицирующие факторы, энцефалопатия гипоксической этиологии, относительный риск, надежность

Relevance. From today's perspective, perinatal encephalopathy of hypoxic origin in newborns is becoming particularly relevant in neonatology, which, in turn, leads to severe clinical complications and disability in adulthood.

Purpose: to identify and establish the significance of some modifying factors of brain damage of a hypoxic nature in newborns under current conditions.

Materials and methods. We conducted a study of the anamnesis, clinical, instrumental, and laboratory data of 80 newborns with perinatal CNS damage, who were in the neonatal pathology department and the intensive care unit of the newborns' intensive care unit of the Children's Multidisciplinary Medical Center of the city of Samarkand in 2022-2024. The patients were divided into II groups: group I consisted of 40 newborns with moderate-degree hypoxic perinatal encephalopathy. The II group of patients consisted of 40 newborns with a similar pathology, but with a severe degree. The control group of our study included 30 healthy newborns. Undefined social risk factors (mother's health status and obstetric history, etc.), gender, age, and clinical parameters were analyzed. During the clinical examination of women, the anamnesis was analyzed (obstetrical in the woman, ante-, intra- and perinatal period of the child). A detailed assessment of the parents' social status, the presence of comorbidities in them, the duration from the onset of symptoms to the time of medical appeal, the date and time of

hospitalization, and the localization of patients' medical appeals were provided. In the anamnesis data, the features of the mother's nutritional behavior during this pregnancy, the type of feeding of the child during the newborn period, are reflected in detail. Further, the data we collected were entered into a computer database with subsequent statistical processing. Further, the analysis was conducted using the "Statistica 6.0" statistical software package, calculating the arithmetic mean (M), the error of the arithmetic mean (m), and Student's t-test (t). At p<0.05, the results were considered statistically significant.

Results and their discussion. Our research was aimed at analyzing modifying risk factors when applying the method of calculating relative risk with a 95% confidence interval. Our results are shown below:

Table 1. Antenatal modifying factors in group I of newborns

Predictors	Group I (n=40)		Control group (n=30)		P	RR	DI min	DI max
	abs.	%	abs.	%				
Stillbirths	4	10	1	3.3	>0.5	1,444	0.885	2,257
Miscarriages	3	7.5	1	3.3	>0.5	1,338	0.731	2,449
Abortions	9	22.5	1	3.3	<0.05	1,742	1,265	2,400
Risk of abortion	15	37.5	4	13.3	<0.05	1,611	1,120	2,317
Induced pregnancy	4	10.0	2	6.7	>0.5	1,185	0.647	2,172
Multiple pregnancies	2	5.0	1	3.3	>0.5	1.175	0.514	2.688
Severe toxicosis	11	27.5	2	6.7	<0.05	1.663	1.178	2.348
Fetal hypoxia	18	45.0	2	6.7	<0.05	2.045	1.448	2.889
Stress during pregnancy	20	50	10	33.3	>0.5	1.333	0.894	1.989

note: p – statistical significance, RR-relative risk

In group I of newborns, factors such as previous abortions, RR 1742 (1.265; 2 400), repeated threat of termination of pregnancy PP 1 611 (1 120; 2.317), preeclampsia PP 1.633 (1.178; 2.384), fetal hypoxia during pregnancy PP 2.045 (1.448; 2.889). undefined Thus, these factors can be called modifying factors for the formation of moderate encephalopathy caused by hypoxia in the perinatal period of life (Table 1).

In the II group of newborns, factors such as stillbirths in the mother's anamnesis, RR 1,524 (1,000; 2,323), repeated abortions in the mother RR 1,833 (1,346; 2,497), repeated episodes of threatened abortion of this pregnancy RR 1,917 (1,317; 2789), severe toxicosis RR 1,817 (1,303; 2,536). Factors such as fetal hypoxia in the antenatal period of RR 6,243 (2,774; 14,049) and maternal stress during pregnancy of RR 2,250 (1,315; 3,849) represented the highest risk for developing severe perinatal encephalopathy (Table 2).

Table 2. Antenatal modifying factors in group II of newborns

Predictors	Group I (n=40)		Control group (n=30)		P	RR	DI min	DI max
	abs.	%	abs.	%				
Stillbirth	6	15,0	2	6,6	>0.5	1,647	1,000	2,438
Miscarriages	3	7.5	1	3.3	>0.5	1,338	0.731	2,449
Abortions	11	27.5	1	3.3	<0.05	1,833	1,346	2,497
Risk of abortion	20	50.0	4	13.3	<0.05	1,917	1,317	2,789
Induced pregnancy	7	17.5	2	6.7	<0.05	1,438	0.946	2,186
Multiple pregnancy	3	7.5	1	3.3	>0.5	1,338	0.731	2,449
Severe toxicosis	14	35.0	2	6.7	<0.05	1,817	1,303	2,536
Fetal hypoxia	35	87.5	2	6.7	<0.05	6,243	2,774	14,049

Stress during pregnancy	30	75	10	33.3	<0.05	2,250	1,315	3,849

Note: P – significance of differences between groups, RR-relative risk

Table 3. Analysis of social and hygienic risk factors for perinatal encephalopathy according to the relative risk criteria in group I

Factor	I group (n=40)		Counter. group (n=30)		P	RR	CI min	CI max
	abs.	%	%	abs.				
Higher education	3	7.5	14	46.7	<0.05	0.253	0.089	0.717
Mother's age over 35 years	4	10	--	-	<0.05	1,833	1,471	2,285
Mother's occupational hazards	5	12.5	--	-	<0.05	1,857	1,483	2,326
Father's bad habits	11	27.5	8	26.7	>0.5	1,018	0.648	1,600
Closely related marriage	6	15	--	-	<0.05	1,882	1,495	2,369
Unregistered marriage	1	2.5	1	3.3	>0.5	0.872	0.215	3.539

Note: P – significance of differences between groups, RR-relative risk

Analysis of social and hygienic risk factors for grade II perinatal encephalopathy in group I showed that maternal age over 35 years RR 1,833 (1,471; 2,285), occupational hazards in the mother RR 1,857 (1,483; 2,326) and closely related marriage RR 1,882 (1,495; 2,369) were the most significant in the formation of pathology (tab. 3).

When assessing the social, as well as epidemiological risk factors for severe hypoxic encephalopathy among newborns of group II, the modifier was the mother's age over 35 years (RR 1.764 (1.495; 2.369)), occupational hazards in the mother (RR 1.789 (1.449; 2.210)) and closely related marriage (RR 1.938 (1.523; 2.466)), as well as the presence of bad habits the father has RR 1,966 (1,254; 3,084) (Table 4).

Table 4. Analysis of social and hygienic risk factors for perinatal encephalopathy according to the relative risk criteria in group II

Factor	II group (n=40)		Counter. group (n=30)		P	RR	CI min	CI max
	abs.	abs.	%	abs.				
Higher education	2	5	14	46.7	<0.05	0.178	0.048	0.657
Mother's age over 35 years	6	15	--	-	<0.05	1,882	1,495	2,369
Mother's occupational hazards	2	5	--	-	<0.05	1,789	1,449	2,210
Father's bad habits	26	65.0	8	26.7	<0.05	1,966	1,254	3,084
Closely related marriage	8	20	--	-	<0.05	1,938	1,523	2,466
Unregistered marriage	1	2.5	1	3.3	>0.5	0.872	0.215	3.539

Note: P – significance of differences between groups, RR-relative risk

Conclusions. Thus, our calculation of the relative risk (RR) for a number of parameters in newborns of the main and control groups showed that the modifying risk factors for the formation of encephalopathy of hypoxic genesis, which arose in

the perinatal period of life, are repeated threats of miscarriage, preeclampsia, mother's age over 35, moderate anemia, acute laryngitis, urogenital diseases. We established the significance of the fact of stillbirth in the mother's history, the father's smoking, the presence of excess body weight and obesity in the mother, the presence of chronic foci of infection in the mother's body, urogenital infection, bacterial infectious pathology.

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