FORECASTING EPILEPSY RISK IN CHILDREN BORN FROM PARENTS WITH EPILEPSY

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Abstract: This article details the condition of newborn babies from mothers with epilepsy. The frequency and nature of epilepsy in children born to mothers with epilepsy are described. Risk factors for the development of epilepsy in children born to mothers with epilepsy were determined.

Keywords: epilepsy, pregnancy, risk factors, children born

Introduction. The health of young children is a core value that the healthcare system has to protect. Currently, the percentage of children with chronic diseases is quite high. However, many diseases are not detected on time due to the low alertness of doctors regarding the likelihood of their development. It is known that with timely diagnosis and the search for risk factors, a specialist is able to recognize a threatening disease in time and prevent its progression.

One of the most common chronic childhood diseases is epilepsy. This disease has not only a severe, sometimes disabling course, but also leaves a significant psychological imprint on the personality of the patient, which leads to stigmatization. The problem is that some epileptic syndromes have the so-called subclinical course, that is, they do not appear in the form of paroxysms. At the same time, persistent changes in the bioelectric activity of the cerebral cortex are noted, which lead to the occurrence of cognitive impairment up to disability of the patient.

The level of knowledge of doctors about the probability of inheritance and predictors of transmission of the disease from parents with epilepsy to offspring remains very low. In addition, in the process of monitoring a pregnant woman with epilepsy, many subtle questions arise regarding the need for taking an antiepileptic drug (AP), the duration of its administration, the validity of additional research methods, and the observation tactics of the patient and her newborn in the first days of life. The appointment of ineffective drugs, the lack of information from doctors about the pharmacokinetic interaction leads to a grave consequence for the fetus, the family of the child and the health system as a whole.

To date, many unresolved issues remain. These include the following: which drugs are most unfavorable for the physical and psychomotor development of the child, what is the likelihood of inheriting epilepsy from the mother, what forms of epilepsy are most often inherited from mothers, what features of the mother's disease determine the prognosis of the likelihood of inheriting the disease.

The doctor's correct choice of tactics for managing a pregnant woman with epilepsy, an adequate assessment of the neurological status and additional research methods, including neuropsychological testing of children born to mothers with epilepsy, allow us to identify the

negative effects of epilepsy on the child's body and prevent the progression of the disease. The search for risk factors that can affect the psychomotor, physical and neurological status of children born from mothers with epilepsy mothers is an extremely relevant aspect of modern neuropediatrics and neurology.

The aim of the study was to analyze the risk factors for the development of epilepsy in children born from mothers with epilepsy.

Materials and research methods: The prognostic table was built according to the data of 100 children born to mothers with epilepsy - they made up the main group. To check the table, we used the data of 18 children born to mothers of patients with epilepsy who were not processed - they made up the control (verification) group.

Clinical observations and diagnostic studies were carried out at the clinic of the Tashkent Pediatric Medical Institute, in family clinics in the Tashkent city, from 2017 to 2019.

In the main group, epilepsy was observed in 13 children (13.0%). When taking into account the sex of a child with epilepsy, the following data were obtained. In total, 4 (30.8%) girls and 9 (69.2%) boys (p <0.05) suffered from epilepsy.

In 4 (30.8%) children of patients with epilepsy, simple partial seizures were observed, complex partial seizures were observed in 7 (53,%) children. Seizures with secondary generalization were detected in 3 (23.1%) children. Generalized seizures occurred in 4 (30.8%) children. Unclassified seizures and cases of status epilepticus were not found in the presented sample of children. This was probably due to the timely appointment of adequate antiepileptic therapy.

An analysis of the data obtained during the study allowed us to develop a methodology for assessing the likelihood (prediction) of the occurrence of epilepsy in a child born to a mother with epilepsy.

To develop the evaluation methodology, we used an heterogeneous sequential recognition procedure (HSRP) developed by E.V. Gubler. When implementing a research institute, algorithms based on the Bayes formula and Wald's method of sequential statistical analysis are used. In the Bayesian approach, the assessment of the conditional probability of a disease is based on information about the probability of a disease in this (studied) group of patients. This approach is associated with the identification of a set of specific symptom complexes that characterize the disease in question. The advantage of the research institute is that it does not require an assessment of the laws that govern the analyzed distribution; it can be used for any form of distribution of indicators. The research institute is implemented using tabular methods of computational diagnostics.

As a result of the use of recognition HSRP, one of three results is obtained: "State A1" (in our study, the Child will not get epilepsy). "Condition A2" (for our study, the Child will become ill with epilepsy), or an indefinite answer that can be obtained both with a lack of information and in the case of the alleged intermediate state between A1 and A2.

At the first stage of calculations by the expert assessment method, 47 factors were selected that were presented in the medical documentation, which could affect the development of epilepsy in a child. These included the following factors: 1) the age of the mother; 2) age of onset of seizures; 3) complaints of the child; 4) the presence of primary generalized tonic-clonic seizures of the mother; 5) the presence of myoclonic seizures in the mother; b) the presence of absences in the mother; 7) the presence of simple partial seizures of the mother; 8) the presence of complex partial seizures of the mother; 9) the presence of secondary generalized tonic-clonic seizures of the mother; 10) etiology of maternal epilepsy (idiopathic, symptomatic, cryptogenic); 11) the nature of maternal epilepsy (generalized, focal); 12) the presence of seizures of the mother of the child during pregnancy; 13) the fact of pregnancy planning; 14) experience of mother's disease at the time of conception; 15) serial number of the current pregnancy; 16) the presence of toxicosis of the mother; 17) the

use of pregnancy preservation methods; 18) the presence of anemia of pregnant women of the mother of the child; 19) the presence of gestosis in the mother during the current pregnancy; 20) the presence of pyelonephritis in the mother of the child during the current pregnancy; 21) the presence of chronic fetoplacental insufficiency in the mother of the child during pregnancy; 22) the presence of intrauterine growth retardation at birth; 23) the serial number of the current birth of the mother; 24) urgency of delivery (urgent, premature); 25) method of delivery (natural childbirth, planned cesarean, emergency cesarean); 26) assessment of the child on the Apgar scale in the first minute of life; 27) assessment of the child on the Apgar scale at the fifth minute of life; 28) the body weight of the newborn at birth; 29) the body length of the newborn at birth; 30) the volume of the head of the newborn at birth; 31) the breast volume of the newborn at birth; 32) the use of manipulation in childbirth; 33) the fact of the child's stay in intensive care; 34) the fact of hospitalization of the child in the neonatal pathology department (NPD); 35) the development of the child in the first year of life; 36) the presence of somatic diseases of the child; 37) the presence of somatic diseases of the mother; 38) the neurological status of the child; 39) the dysraphic status of the child; 40) the results of an EEG study of the mother; 41) the results of an MRI scan of the mother; 42) the results of an EEG study of the child; 43) the results of an MRI scan of the child; 44) the type of drug taken by the mother during pregnancy; 45) the regimen of the drug by the mother of the child (monotherapy, polytherapy, duotherapy), 46) the psychomotor development of the child in the first year of life; 47) the lag in the physical development of the child.

Further, using the χ2 criterion, an assessment was made of the relationship of each of the above factors with the disease of the child with epilepsy.

Results of the study. As a result of the assessment, 18 factors were identified that significantly influenced the occurrence of epilepsy in a child. The set of factors for which such a relationship was identified is as follows: the age of the onset of maternal attacks (P = 0.045); complaints in the child (P = 0.034); the presence of primary generalized tonic-clonic seizures in the mother of the child (P = 0.016), the presence of complex partial seizures in the mother of the child (P = 0.045); the presence of secondary generalized tonic-clonic seizures (SGTCS) in the mother of the child (P = 0.041); the nature of maternal epilepsy (P = 0.042); the presence of toxicosis in the mother of the studied child (P = 0.039); the use of conservation methods throughout the current pregnancy (P = 0.017); serial number of childbirth in the mother (P = 0.041); delivery method (P = 0.049); the fact of staying in the arresters (P = 0.042); the presence of somatic diseases of the child (p = 0.038); the dysraphic status of the child (P = 0.043); results of an EEG study of a child (P = 0.001); the results of an MRI scan of the child (P = 0.043); the type of drug taken by the mother during pregnancy (P = 0.044); lag in the neuropsychiatric development of the child (P = 0.008); lag in the physical development of the child (P = 0.012).

The next stage of the study was to assess the differential information content of these factors. This assessment made it possible to select the most significant (informative) of them for the prognostic table.

For those factors that revealed a connection with the child's disease with epilepsy, the information coefficient was calculated.

In the prognostic table, the factors are arranged in decreasing order of informativeness coefficients. Only those factors were included in the table whose information content was more than 0.6, since it is not advisable to leave factors with low information content in the forecast table because the calculation procedure is lengthened, but the overall information content of the table is slightly increased. Thus, as a result of obtaining the information coefficient of each factor, 16 factors were selected, the coefficient of information content of which exceeded 0.6.

Table 1 presents the results of the calculations.

Table 1: **Table for predicting the epilepsy disease of a child born from a mother with epilepsy**

Factor	Graduation	PC	J
The results of an EEG study of a child	Norm Changes	-5.0 7,3	6.38
Delays in the psychomotor development of a child	No there are	5,8 -3.0	2.43
Lag in the physical development of the child	No there are	4.7 -4.0	2,38
The regimen of the drug by the mother of the child	Monotherapy Polytherapy	3.9 -3.3	2,38
The presence of somatic diseases in the mother of the child	There is no	3,2 -3.1	1.85
Age of debut of epilepsy in the mother of the child	0-2 years 11 months 3-9 years 11 months 10-15 years 11 months 16 years more	-1,3 0,2 -3,3 4,3	1.78
The fact of hospitalization of the child in acute renal failure	There are no	3.9 -2,3	1.75
The presence of primary generalized tonic-clonic seizures in the mother of the child	No Yes	3.4 -2,5	1.48
Carrying out activities to maintain pregnancy	Well no	-2,4 3.3	1.40
SGTCS at the mother	There is no	2,8 -1,9	1.03
The presence of toxicosis in the mother of the child	Well no	2.5 -1.8	0.89
Somatic diseases of the child	Well no	-2,0 3,5	0.79
The drug used by the mother during	Depakn	1,4	0.74

pregnancy	Phenobarbital Others Not Accepted	2.0 -4,5 1.1	
Maternal Epilepsy Form	Generalized Partial	-1.9 3.8	0.73
The presence of complex partial seizures in the mother of the child	There is no	3,2 -1,5	0.71
Childbirth	Self C-section	-1,7 2,2	0.62

The table is used as follows. During the analysis of the anamnesis, neurological status, additional research methods, neuropsychological testing of the child, the gradations of each of the factors presented in the table are clarified.

Then they begin to add prognostic coefficients corresponding to these gradations. When the amount becomes more or less than a predetermined threshold value, the calculations are stopped and a conclusion is made about the likelihood of a child becoming ill with epilepsy in the future.

If the sum turned out to be more than the threshold value with the "+" sign, then it is concluded that the most likely state is A1, in our case, the child will not get epilepsy.

If the sum is less than the threshold value with a "-" sign, then it is concluded that the most likely state is A2, in our case, the child will get epilepsy.

If all the coefficients are summed up, and the threshold value is not reached, then an uncertain answer is given based on the results of applying the forecast table.

The threshold values of the sums of prognostic coefficients are taken from the corresponding statistical tables. If the error level is 0.05 (5%), the threshold sum value presented in the table is = 13.

The results of checking the table gave 6 correct answers (75.0%) and 2 indefinite (25.0%), there were no incorrect answers.

Thus, the proposed table allows us to predict the likelihood of developing epilepsy in children born to mothers with epilepsy

Conclusions:

1. The frequency of occurrence of epilepsy among children born to mothers with epilepsy is 13.0%.

2. As a result of the assessment, 18 factors that significantly influenced the occurrence of epilepsy in a child were identified.

3. An algorithm for predicting the development of epilepsy in children born from parents with epilepsy has been developed.

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