FOLIC ACID USE IN PRE-SCHOOL CHILDREN WITH EPILEPSY

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Annotation.*The condition of 70 children with epilepsy was studied. 38 (54.3%) children (Group I) received folacin (folic acid) at the recommended dose of 5 mg per day. 32 (45.7%) children (Group II of the study) did not take the drug for various socio-economic reasons. The level of folates in erythrocytes and the level of homocysteine in venous blood plasma were studied in children of three study groups. According to the results of homocysteine in the groups, it was noted that the concentration was distributed as follows: II - 10.5 ± 0.3 μmol / l, and in the control - 5.1 ± 0.1 μmol / l, which shows significant hyperhomocysteinemia in groups with epilepsy, while a positive effect on this indicator is noted for folic acid intake at a dose of 5 mg per day (Folacin). The study revealed a direct link between the use of folic acid and the level of pathology detected in the process of neuropsychic development of children.*

Key words*: epilepsy, folic acid, children under school age.*

Аннотация. *Изучено состояние 70 детей, больных эпилепсией. 38 (54,3%) детей (I группа) получали фолацин (фолиевую кислоту) в рекомендованной дозе 5 мг в сутки. 32 (45,7%) ребенка (II группа исследования) не принимали препарат по различным социально-экономическим причинам. Изучены уровень фолатов в эритроцитах и уровень гомоцистеина в плазме венозной крови у детей трех групп исследования. По результатам гомоцистеина в группах было отмечено, что концентрация распределялась следующим образом: II – 10,5 ± 0,3 мкмоль/л, а в контрольной – 5,1 ± 0,1 мкмоль/л, что показывает значительную гипергомоцистеинемию в группах с эпилепсией, при этом отмечается по ожительное влияние на данный показатель приема фолиевой кислоты в дозе 5 мг в сутки (Фолацин). В результате исследования выявлена прямая связь между применением фолиевой кислоты и уровнем выявленной патологии в процессе нервно-психического развития детей.*

Ключевые слова*: эпилепсия, фолиевая кислота, дети до школьного возраста.*

Epilepsy is a chronic brain disorder characterized by recurrent seizures that result from excessive neuronal activity and are accompanied by various clinical and paraclinical manifestations.

Epilepsy in children is a long-term ongoing neurological disease of a chronic nature, in which the central nervous system is affected. The condition is manifested by sudden attacks of seizures, loss of consciousness, motor disorders and other unpleasant signs. Finding the causes of epilepsy in children, assessing the symptoms and selecting the best treatment is

the responsibility of pediatric neurologist-epileptologists, with input from a number of other specialists as needed (6).

Statistics show that 1-5% of children of various ages, including adolescents, are diagnosed with some form of epilepsy, and almost one in two adults report experiencing the first signs of epilepsy as a child.

The incidence of epilepsy is 50-70 cases per 100,000 population per year, the prevalence of epilepsy is 5-10 cases per 1,000 people, at least 1 seizure during life is suffered by 5% of the population, in 20-30% of patients the disease is lifelong (4,5,7).

The cause of high perinatal morbidity in the majority of newborns from mothers with epilepsy is damage to the central nervous system (CNS). Thus, during clinical observation, neurologic symptoms are detected in 35.4% of newborns from epileptic mothers, and in 11.6% they persist after discharge from the hospital.

This is explained by the fact that fetuses with maternal epilepsy have a delay in the maturation of the nervous system due to the use of anticonvulsant therapy for the underlying disease (5).

The percentage of cases causing death of children in the first years of life from congenital and hereditary diseases is quite high, despite well-developed pediatric care in developed countries. In the absence of prevention, congenital and hereditary diseases cause the death of at least 14 out of 1,000 children in the first 3 years of life, with congenital and hereditary diseases accounting for congenital malformations (CMDs) account for half of the cases (7).

Neural tube defects (NTDs) account for 5.3% of all birth defects in the structure of the pathology of children with malformations, and the share of this pathology among the causes of death from NTDs is much higher. Almost every fourth child who died from complications associated with malformations suffered from DND (3).

When analyzing the database obtained from the regional registers of Andijan Oblast territories monitoring congenital malformations in children, spinal hernias and anencephaly (up to 70% of all central nervous system malformations), cleft lip and palate (57.23% in the group of digestive system malformations) were the most numerous in the structure of CHD within each group of malformations (1,2,6).

It is known that selective information that folic acid deficiency in children is a risk factor for the most severe, uncorrectable fetal malformations - fetal DNTs - appeared in the world medical press in the early 1990s.

Published in 2000, the summary results of clinical studies conducted in Hungary, Great Britain, France, USA and other countries showed that daily use of folic acid or multivitamins containing 0.4-1.0 mg of folic acid by women in the period before conception and in the first months of pregnancy reduces the risk of primary and recurrent birth of children with brain and spinal cord defects and other malformations (4).

This scientific discovery and the resulting preventive effect were of great importance for practical health care in many countries, since this group of malformations occupies a leading place in the structure of CHD leading to infant mortality and early disability (7).

Thus, in addition to DNTs, the group of so-called folate-dependent malformations includes limb reduction malformations, genitourinary defects and some maxillofacial anomalies, as well as a number of malformations of the cardiovascular system. The main risk factors for primary fetal or infant malformations, besides maternal folic acid deficiency and impaired vitamin B1 status, are diabetes mellitus, use of valproic acid and carbamazepine, and obesity (4).

The only accurate way to calculate folate content is to measure blood folate levels, with plasma folate levels reflecting current folic acid intake, whereas erythrocyte folate levels are related to folate intake in previous months when currently circulating red blood cells were still developing in the bone marrow.

Materials and Methods. We studied the condition of 70 children with epilepsy. 38 (54,3%) children (I study group) received Folacin (folic acid) in the recommended dose of 5 mg/day. 32 (45.7%) children (II study group) did not receive the drug for various socioeconomic reasons. The analysis was compared with the condition of 25 children under school age in the control group (III study group).

In addition, we studied the level of folate in erythrocytes and the level of homocysteine in venous blood plasma in children of all three study groups.

Analyzing the obtained results, it was noted that the concentration of homocysteine in the groups was distributed as follows: 6.3 ± 0.2 μmol/L in group I, 10.5 ± 0.3 μmol/L in group II, and 5.1 ± 0.1 μmol/L in the control group, which shows significant hyperhomocysteinemia in the groups with epilepsy, with a positive effect of folic acid intake at a dose of 5 mg per day (Folacin) on this index.

When assessing the results of the folate status of erythrocytes, a significant decrease in the majority of folates was noted, but it should be noted that only the level of methylenetetrahydrofolate decreased insignificantly and on average approached physiologic values. Initially, immediately after birth, the condition of newborns was assessed according to the Apgar scale in order to tentatively determine the severity of asphyxia and to carry out the necessary volume of resuscitation measures. Subsequently, all infants were subjected to a detailed clinical and laboratory examination, after which the degree of asphyxia was finally determined.

Results. The most frequent complication of epilepsy in group II children was a change in neurologic status - 21.4%, while in group I this index was lower and amounted to 18.3% of cases, and in the control group - 6.7%. Acute changes in neurologic status were observed in labor in group II in 5.7% of cases, in group I - in 4.3%, along with 3.3% - in the control group. It should be noted that one of the immediate complications in children born to mothers with epilepsy was fetal adynamia in group II 18.6%, along with 6.7% in the control group. Morpho-functional immaturity is a characteristic feature of newborns born to mothers with epilepsy, accounting for 25.7% in group II and 18.6% in group I. In Group I, 89.5% of newborns were premature and 10.5% were premature.

The mean body weight of the premature newborns was 3320 ± 290 g, while the body weight of the preterm infants was 2250 ± 180 g. The height of the children was 50.4 ± 1.1 cm and 43.8 ± 1.8 cm, respectively.

In group II of the study group, 87.5% of the newborns were premature and 12.5% were premature. The average body weight of the preterm infants was 3080 ± 310 g, and that of the preterm infants was 2110 ± 140 g. The height of the children was 49.8 ± 1.4 cm and 42.6 ± 1.2 cm, respectively.

No cases of severe asphyxia were registered in the observed groups. 7.9% and 12.5% of children were born in the state of moderate asphyxia (Apgar score of 6-7 points at the first minute of life), respectively. The state of medium degree asphyxia was characterized by weakened breathing, perioral and acrocyanosis, and decreased muscle tone. In general, the rate of asphyxia in the studied groups exceeded the frequency of asphyxia in the control group of newborns.

These newborns had disorders of the adaptation period, accompanied by changes in the CNS (impaired hemoliquorodynamics), a large initial weight loss and its late recovery, and the development of respiratory distress syndrome. Compared to birth, the weight deficit in this group amounted to 124.1 ± 46.6 g.

The development of distress and failure of adaptation in newborns often occurred on the 1st-3rd day of life. Children with manifestations of intrauterine hypotrophy were especially vulnerable in this respect.

As can be seen from the presented data, the use of the drug has a positive effect not only on congenital pathology, but also improves the course of the gestation process itself, reducing the risk of obstetric c The problems of newborns from mothers with epilepsy were caused by both intrauterine fetal suffering due to deterioration of metabolic processes in the mother's body, the use of various regimens of anticonvulsant therapy, and a number of obstetric complications, and depended on the degree of epilepsy compensation in the mother, timely diagnosis of pregnancy complications, and the term and method of delivery.

Conclusions. Thus, our data have once again shown that there is a definite correlation between the degree of CNS lesions in children under school age in the process of physical development and the severity of the course. In this case, the favorable factor was the use of Folacin.

The study revealed a direct correlation between the use of folic acid preparation and the degree of detected pathology in the period of neuropsychiatric development of children.

All of the above points to the need for further study of this pathology in order to improve the indicators of neuropsychiatric development in this contingent of children. The application of preventive technologies by physicians will reduce the frequency of neuropsychiatric pathology in children with epilepsy omplications.

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