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ANALYSIS OF FOLIC ACID LEVEL IN THE BLOOD OF WOMEN WITH FETAL LOSS SYNDROME

Abstract. *The article presents the level of folic acid in plasma of pregnant women with fetal loss syndrome. An inverse correlation between the level of folic acid in the blood and the number of miscarriages and abortions in the anamnesis of patients has been found. The correction of folic acid deficiency at the dose of 400 mcg per day with the subsequent determination of the control level has been suggested. Against the ground of treatment the level of folic acid was normalized, the value was statistically significant.*

Ключові слова: *фолієва кислота, синдром втрати плода, перинатальні втрати.*

Introduction. Folic acid – N-{4'-[(2-amino-4-oxo-6-pteridile)-methyl]-aminobenzoil}-L(+)-glutamic acid – obtained from spinach leaves in 1941 and synthesized under the supervision of Yellapragada Subbarow, an Indian-American biochemist, in 1945. It is not accumulated in the body, and supplied with the intake of fresh vegetables, liver, mushrooms, egg yolks, legumes, brans and cereals. In addition to exogenous way of intake there is also endogenous bacterial synthesis of folates in the large intestine. Absorption of this substance is accomplished in the upper part of the small intestine. With thermal treatment of food approximately 90% of folic acid is lost (up to 50 % with boiling eggs, up to 95 % after meat is fried). Regular consumption of alcoholic drinks results in reduced amount of folic acid in the body.

Folacin takes an active part in oxidation-reduction processes, supports the immune system, prevents fatty infiltration of the liver, possesses anti-anemic action, promotes normal maturation and functioning of the placenta, has estrogen-like effect, reduces the signs of postpartum depression. Folic co-enzymes promote biosynthesis of purine and pyrimidine bases, nucleic acids, amino acids, increase the body intake of glutamic acid and tyrosine, influence upon rapidly growing tissues. In case folic cycle is disturbed, the risk of development of the following pathological processes increases:

- complications of pregnancy (placental dysfunction, gestosis, exfoliation of the normally

located placenta) due to microscopic clots formation with disorders of microcirculation and formation of spiral arteries pathology;

- developmental defects of the fetus;
- prenatal death of the fetus;
- cardio-vascular disorders;
- osteoporosis;
- lens ectopia;
- cancerogenesis;
- intensification of side-effects after chemotherapy.

Objective: to examine the level of folic acid in plasma of women with fetal wastage syndrome.

Materials and methods. To perform our investigation the group of 20 pregnant women was formed aged from 19 to 35 with fetal wastage syndrome without comorbid extragenital pathology and bad habits. The patients were informed about necessity to undergo additional examinations, and their informed written consent was obtained. The criterion to be included into the study was absence of biochemical and USD-markers of fetal pathology with reproductive loss available in anamnesis. The study was performed in the licensed certified laboratory in Kherson region. The data obtained were statistically processed in the program package Statistica. Critical index of Student t-criterion was detected with significance level $p=0,05$. Reference values of folic acid content were from 3,1 to 20,5 ng/ml. The pregnant women gave their blood for analysis on empty stomach since 12 to 20 weeks and 30 weeks of gestation.

Results and discussion

The retrospective analysis has found that outcome of pregnancy of 8 patients (40%) was miscarriage in the term of 10-12 weeks, 2 patients (10%) – still birth in the term of 24 weeks, in 1 patient (5%) experienced early neonatal death (during 4 hours after birth), 9 women (45%) experienced miscarriage of more than three pregnancies in the term of 6-8 weeks, in 5 examined women three pregnancies were interrupted by medical abortions. In all the women the content of folic acid was not higher than that of the lower normal level. It was within the range of 1,7-2,3 ng/mg in 5 patients, from 2,4 to 3,0 ng/ml in 7 patients, and in the rest 8 women – 3,0-3,1 ng/ml. The analysis of the information obtained has found a reverse correlation between the level of folic acid in the blood of women and clinical signs of fetal loss syndrome. In order to correct folate insufficiency folic acid in the dose of 400 mcg per day was indicated to the patients for the period of 1 month with the control of indices after the treatment. Folic acid content in the blood plasma of patients normalized against the ground of the therapy initiated. The value ranged from 5,5 to 10,5 ng/ml ($p < 0,05$), which is statistically reliable.

Conclusion. The investigation performed has found that in women with fetal loss syndrome folic acid level is considerably lower of that the normal one in spite of comorbid somatic pathology unavailable. Additional intake of folic acid in the dose of 400 mcg per day during a

month enables to normalize the values of folate content in the blood of patients.

Prospects of further studies. The data obtained are rather perspective to elaborate the plan of pre-conceptual preparing and management of both pregnant women with fetal loss syndrome and those pregnant for the first time.

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