

Clinical Case of Positive Influence of Thioctic Acid on Pregnancy in a Woman after 2 *In Vitro* Fertilization Failure Attempts

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Polycystic ovary syndrome (PCOS) is one of the urgent problems among women of reproductive age. PCOS occurs in 5 - 10% of patients with infertility and is responsible for anovulatory infertility in more than 80% of cases [1]. It was convincingly proved, those hyperinsulinemia and insulin resistances against the background of obesity are one of the main reasons for the development of PCOS [2-4]. However, hyperinsulinemia is also observed in women without obesity, therefore overweight can only be a factor contributing to the development of insulin resistance in PCOS [5]. Women with PCOS are at an increased risk of developing metabolic syndrome. A number of studies have demonstrated that the use of thioctic acid in person with obesity and/or overweight reduces both basal and stimulated hyperinsulinemia. This is lead to a decrease in the level of insulin resistance, an improvement in lipid and carbohydrate metabolism, and a decrease in body weight [6,7]. In this regard, it is relevant to describe a clinical case of the complete restoration of ovulation and child birth while taking thioctic acid.

Patient R. turned to the Department of endocrinology at the age of 24 with complaints of the absence of an ovarian-menstrual cycle (OMC). She is known to have taken oral contraceptives at the age of 15. During the administration of ethinylestradiol/desogestrel 30/150 mcg, menstrual flow appeared. When the drugs were stopped menstruation stopped too. Since childhood, she was overweight, blood pressure up to 135/95 mmHg. At the time of treatment, menstruation was absent during the year; BMI was 27 kg/m². According to the results of the oral glucose tolerance test, glycemia was 5.8 - 7.4 - 8.0 mmol/L (corresponds to prediabetes). A high-protein diet was prescribed. In addition, metformin 2000 mg was prescribed. Weight decreased, body mass index (BMI) reached 25 kg/m², blood pressure figures returned to normal, the anovulatory menstrual cycle recovered. But after 6 months, the patient stopped taking metformin, stopped to follow, gained weight (BMI to 34 kg/m²), the menstrual cycle stopped again. Thioctic acid 600 mg at the day was prescribed. After 6 months of taking the drug and following a high-protein diet, the patient lost weight, BMI became 27 kg/m², ovulation was confirmed by the detection of a dominant follicle according to the ultrasound examination on day 20 - 24 of the OMC. The patient was transferred for further treatment to the obstetric and gynecological clinic, where she was observed for 4 years with a diagnosis: Infertility II, combined genesis. Chronic metroendometritis, remission. Chronic bilateral salpingo-oophoritis, remission. Vaginitis. Cervical endometriosis. PCOS. Obesity I. Adhesive process in the pelvis. Hypertension 1 stage. Risk 2. Syndrome of insulin resistance. Impaired glucose tolerance. Vitamin D deficiency. Genetically determined predisposition to thrombophilic conditions. During observation and treatment in the clinic, thioctic acid and metformin were not taken. According ultrasound examination of the genitals from 10/10/2016: the uterus is 54 x 40 x 53, the myometrium is heterogeneous. M-ECHO - 6.4 mm. The volume of the left ovary is 10.3 ml with follicles up to 6 mm, in an amount of 8 in a slice. The volume of the right ovary is 12.24 ml with follicles up to 6 mm, in an amount of 8 in a slice, diffuse changes in endo-, myometrium, multifollicular changes in the ovaries. At 36, ovarian diathermocauterization was performed and cyclic hormone therapy was prescribed for 3-6 months. At the age of 37 and 38 years, 2 *in vitro* fertilization (last attempt was in 2018) attempts were made, which failed. June 2018: LH - 4.18 mIU/ml, PRL - 275 mIU/l, T - 0.308 ng/ml, TSH -1.6004 mIU/ml, FSH - 7.48 mIU/ml.

In July 2018, the patient was again prescribed thioctic acid 300 mg 2 times a day. At the end of September 2018, hysteroscopy and dissection of intrauterine synechia were performed. Pregnancy occurs while taking thioctic acid at a dose of 300 mg 2 times for 3 months. During gestational age of 13 weeks, gestational diabetes was detected. Also, Wernicke's syndrome (vitamin B1 deficiency) was detected. A high-protein diet, control of blood glucose, vitamin B1 2 ml intramuscularly until the complete disappearance of nausea and vomiting, potassium iodide 100 mg was recommended. The patient independently received thioctic acid at a dose of 300 mg per day throughout pregnancy. Due to increasing fetal hypoxia, according to ultrasound data at 38 weeks, pregnancy was resolved by cesarean section. The baby was born weighing 2600g, 50 cm long, 6 - 7 points on the Apgar scale. From birth, the condition is serious due to neurological symptoms, respiratory disorders, intoxication. Neurological syndrome was stopped by general massage courses.

This clinical case once again proves the positive effect of thioctic acid on the restoration of OMC, the appearance of ovulation and the possibility of successful pregnancy.

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