

# Optimization of Preparation of Women with Metabolic Syndrome for Pregnancy

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**Abstract** Rationale. Metabolic syndrome (MS), which is characterized by the presence of tissue insulin resistance, hyperinsulinemia, impaired glucose tolerance, primary arterial hypertension, dyslipidemia, as well as abdominal obesity and hyperuricemia in one patient, is of great interest to researchers [2,8]. Metabolic syndrome is one of the main problems not only in medicine, but also in the social and mental state of society. Purpose. Prevention of intrapartum and postnatal complications in women with metabolic syndrome by optimizing methods of pregravidar preparation. Material. The study was conducted in the department of gynecology of the multidisciplinary clinic of Samarkand State Medical University for 2017-2022 years. 100 women aged 20 to 38 years who were diagnosed based on the standards of metabolic syndrome who had menstrual irregularities and impaired fertility were examined. Results. At the first stage of treatment with diet and physical activity, normalization of menstrual function with loss of more than 7% of body weight in 20 patients was observed after one month. COCs + drospirenone was administered as the 1st line of therapy to restore menstrual cycle disorders. Ovulation inducers were prescribed in 78% of patients, the first series included sequential application of folliculogenesis inducers in three cycles, after which spontaneous uterine pregnancy occurred in 15% of patients. Conclusions. Thus, restoration of fertility in patients with metabolic syndrome with normalization of body weight and restoration of menstrual functions provided the frequency of uterine pregnancy in 22% of cases.

**Keywords** Pregravidar preparation, Metabolic syndrome, Polycystic ovary syndrome, Infertility

## 1. Introduction

In recent decades, due to global urbanization and decreased physical activity, there has been an active increase in the number of overweight and obese people worldwide, which makes this problem one of the most urgent for the medical community. Increased body weight is associated with many associated diseases, including metabolic and cardiovascular disorders [1,3,4,10]. In the reproductive age, overweight leads to decreased fertility. According to some data, 8% of overweight women and 18% of obese women have problems with reproductive function [5,12].

The most common cause of infertility in such patients is polycystic ovary syndrome (PCOS) [2,6]. The complex of metabolic disorders based on insulin resistance (IR) and hyperinsulinemia is denoted by the term "metabolic syndrome". PCOS can also be considered as one of the manifestations of MS. In many women, weight gain precedes the clinical manifestations of PCOS. Up to half of the world's MS cases remain undiagnosed.

Regardless of body mass index (BMI), android-type

adipose tissue redistribution occurs in 50-70% of patients with PCOS, and excess visceral adipose tissue is associated with increased IR and prevalence of MS [7,8,11]. According to the study of N.K. Stepto et al. [9,10,13], insulin resistance is determined in 75% of patients with normal body weight and 95% of patients with overweight.

## 2. Purpose of the Research

Prevention of intrapartum and postnatal complications in women with metabolic syndrome by optimizing methods of pregravidar preparation.

## 3. Materials and Methods

The study was conducted in the gynecology department of the multidisciplinary clinic of Samarkand State Medical University for 2017-2022. 100 women aged 20 to 38 years who were diagnosed based on the standards of metabolic syndrome with menstrual cycle disorders and fertility impairment were examined. After the first line of therapy in the absence of dynamics, half of the women were transferred to another type of treatment after 4 months. In the remaining patients, in order to normalize ovulatory function and to treat infertility, the necessary diagnostic methods of gynecological

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and endocrinological diseases were carried out. The indication to change therapeutic tactics was the lack of effect from the current therapy in at least three cycles of conservative therapy, weight loss of patients, lack of effect from the prescription of combined oral contraceptives (COCs) with antiandrogenic progestins to normalize the menstrual cycle for 6 cycles in patients over 30 years old. In the absence of ovulation within three months after the procedures, ovulation inducers (clomiphene citrate and rFSH) were used additionally and sequentially, each not more than three cycles according to the generally accepted methods. Clinical examination of the patients included anamnesis collection according to the scheme, primary examination, gynecological examination and ultrasound examination of the pelvic organs, hormonal background and vitamin D, endocrinologist consultation.

All patients with body mass index (BMI) more than 26, the first stage of treatment was prescribed a balanced diet with total calories up to 2000 kcal and dosed physical activity. Simultaneously we prescribed Metformin 500 mg 3 times a day. If irregular menstrual cycles were detected in patients, COCs with drospirenone were prescribed, in our case "Midiana" for up to 6 menstrual cycles. Contraceptives (CC) were administered to patients with persistence of anovulation after treatment for three cycles or in case of insensitivity to Midiana. The dose of the drug was 100 mg/day for 5 days (from day 5 of the cycle). Adequate ovarian response to stimulation was evaluated from day 1 of its withdrawal, according to the size of growing follicles on ultrasound. Ovulation induction with rFSH (Puregon) was performed from day 3 of the cycle or menstrual-like response induced by gestagens. The dose of rFSH was administered from 50 to 75 IU for 5 days with subsequent evaluation of the adequacy of response.

## 4. Results and Discussion

We examined 100 women with metabolic syndrome who had infertility, obesity and anovulatory cycle. Of these, 50 women had ovarian form of CML, the rest had no polycystic changes but had changes in hormonal background and glucose resistance. Among the patients studied, 85% were obviously obese and 35% had oily skin with acne. BMI data showed that 38 patients were overweight, characteristic of obesity degree 1, with a BMI between 29 and 39, while 34% of the women had a BMI between 39 and 49. Visceral distribution of adipose tissue was observed in the majority. When hormonal status was examined, increased testosterone was present in 58.0% of women, increased LH/FSH index in 45.0% of women. Increased LH level was detected in 56 women, although it remained normal in 21 patients.

At the first stage of treatment with diet and exercise, normalization of menstrual function was observed after one month, with a loss of more than 7% of body weight in 20 patients. In case of normalization of body weight and metabolic disorders, when menstrual cycle was not

normalized, preparations for menstrual cycle restoration were prescribed. COCs + drospirenone was administered as the 1st line of therapy to restore menstrual cycle disorders. Menstrual function was restored in 32% of women. It took from 3 to 6 months to achieve the results of treatment, disappearance of acne and anovulation with COCs. At this stage, spontaneous uterine pregnancy occurred in 22% of patients. One patient had a multiple (twin) pregnancy.

Ovulation inducers were administered in 78% of patients; the first series included sequential application of folliculogenesis inducers in three cycles, followed by spontaneous uterine pregnancy in 15% of patients. As a result, the remaining patients were divided into 2 groups - one (23 patients out of 63) were repeated ovulation stimulation with inducers for 2 more cycles and only in case of unsuccessfulness the treatment scheme was changed, and the others (40 patients out of 63) underwent surgical intervention, after which repeated stimulation according to different schemes was also prescribed, because they were diagnosed with polycystic ovary syndrome. The result of repeated ovulation stimulation without surgical intervention was the registration of uterine pregnancy in 5 patients, unfortunately, in one of them ectopic pregnancy was observed. In 10 women after surgical intervention, courses of repeated stimulation were immediately prescribed, and uterine pregnancy was registered in 3 cases. And the remaining 13 patients had to wait for the effect of surgical treatment itself, i.e. 6-month passive waiting for the onset of "spontaneous" pregnancy. As a result, pregnancy was registered in 4 patients within 6 months. The remaining patients received a course of repeated stimulation, resulting in 2 more uterine pregnancies.

## 5. Conclusions

Thus, restoration of fertility in patients with metabolic syndrome with normalization of body weight and restoration of menstrual functions provided the frequency of uterine pregnancy in 22% of cases. In the first line of ovulation stimulation, reproductive function was resumed in 15% of patients. Repeated stimulation was effective in 5% of cases without surgical intervention in patients with PCOS and metabolic syndrome, with the proportion of ectopic pregnancy amounting to 1%. After laparoscopy, 4% had a spontaneous pregnancy within 6 months and 2% only after re-stimulation. When ovulation stimulation was used immediately after laparoscopy, a 3% recovery of fertility was recorded. In summary, when using these treatments, fertility restoration with MS and PCOS treatment occurred in 52% of patients.

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