

UDK: 616.39-008.9:616-056.257-055.2

WEIGHT REDUCTION AS A STRATEGY FOR IMPROVING CARDIOVASCULAR RISK PROFILE AND REPRODUCTIVE FUNCTION IN WOMEN WITH METABOLIC SYNDROME

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Abstract: Metabolic syndrome is a major risk factor for cardiovascular disease and reproductive dysfunction in women of reproductive age. This study aimed to evaluate the effects of body weight reduction on cardiometabolic risk factors and reproductive health in women with metabolic syndrome. Fifty-three women with metabolic syndrome underwent a comprehensive treatment program including dietary intervention, physical activity, and pharmacological therapy for 12 weeks. Weight reduction was associated with significant improvements in anthropometric measurements, lipid profile, arterial blood pressure, and restoration of menstrual function in the majority of patients. These findings suggest that effective weight management plays an important role in reducing cardiovascular risk and improving reproductive outcomes in women with metabolic syndrome.

Keywords: metabolic syndrome, obesity, weight reduction, cardiovascular risk, reproductive function, women, insulin resistance, lipid profile, menstrual function.

ВЛИЯНИЕ СНИЖЕНИЯ МАССЫ ТЕЛА НА КАРДИОМЕТАБОЛИЧЕСКИЕ ФАКТОРЫ РИСКА И РЕПРОДУКТИВНОЕ ЗДОРОВЬЕ ЖЕНЩИН С МЕТАБОЛИЧЕСКИМ СИНДРОМОМ

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Аннотация: Метаболический синдром является одним из основных факторов риска сердечно-сосудистых заболеваний и нарушений репродуктивной функции у женщин репродуктивного возраста. Целью

исследования явилась оценка влияния снижения массы тела на кардиометаболические факторы риска и репродуктивное здоровье женщин с метаболическим синдромом. В исследование были включены 53 женщины с метаболическим синдромом, которым в течение 12 недель проводилась комплексная терапия, включавшая диетотерапию, дозированные физические нагрузки и медикаментозное лечение. Снижение массы тела сопровождалось достоверным улучшением антропометрических показателей, липидного профиля, уровня артериального давления и восстановлением менструальной функции у большинства пациенток. Полученные результаты свидетельствуют о том, что эффективное снижение массы тела способствует уменьшению сердечно-сосудистого риска и улучшению репродуктивного здоровья женщин с метаболическим синдромом.

Ключевые слова: метаболический синдром, ожирение, снижение массы тела, сердечно-сосудистый риск, репродуктивная функция, женщины, инсулинорезистентность, липидный профиль, менструальная функция.

Introduction: Metabolic syndrome is a multifactorial disorder characterized by abdominal obesity, insulin resistance, dyslipidemia, arterial hypertension, and impaired carbohydrate metabolism. It is recognized as one of the leading contributors to cardiovascular morbidity and mortality worldwide. The prevalence of metabolic syndrome has increased substantially over recent decades because of sedentary lifestyles, unhealthy dietary habits, and the growing incidence of obesity. Women of reproductive age are particularly vulnerable, as metabolic syndrome adversely affects both cardiometabolic health and reproductive function. Excess adipose tissue promotes chronic low-grade inflammation, endocrine imbalance, and insulin resistance, resulting in menstrual irregularities, anovulation, infertility, and an increased risk of polycystic ovary syndrome. Furthermore, metabolic syndrome significantly elevates the risk of coronary artery disease, stroke, and type 2 diabetes mellitus, thereby reducing life expectancy and quality of life. Lifestyle modification remains the cornerstone of treatment, while pharmacological therapy may enhance the effectiveness of weight reduction and metabolic control in

selected patients. Clinical studies have demonstrated that even moderate weight loss is associated with significant improvements in insulin sensitivity, lipid metabolism, blood pressure, and reproductive outcomes. Restoration of menstrual function and reduction of cardiovascular risk have been reported following successful body weight reduction. Despite considerable progress in the management of metabolic syndrome, optimization of treatment strategies aimed at achieving sustained weight loss and improving both metabolic and reproductive health remains an important challenge. Therefore, evaluating the impact of body weight reduction on cardiovascular risk factors and reproductive function is essential for developing effective therapeutic approaches and improving long-term outcomes in women with metabolic syndrome.

Aim of the study: To evaluate the effects of body weight reduction on cardiovascular risk factors and reproductive function in women with metabolic syndrome following comprehensive lifestyle and pharmacological intervention.

Materials and methods. A prospective clinical study was conducted at the Department of Internal Medicine of a tertiary healthcare institution in Uzbekistan. The study included 53 women of reproductive age diagnosed with metabolic syndrome according to established clinical criteria. The participants were between 18 and 30 years of age, with a mean age of 26 ± 3 years. All patients underwent comprehensive clinical evaluation, including medical history, physical examination, anthropometric measurements, body mass index, waist circumference, and blood pressure assessment. Laboratory investigations included fasting blood glucose, lipid profile, and other routine biochemical tests to evaluate cardiovascular risk factors. Women with type 2 diabetes mellitus, uncontrolled arterial hypertension, severe psychiatric disorders, or other serious chronic diseases were excluded from the study. All participants received a comprehensive weight reduction program consisting of an individualized hypocaloric diet, regular physical activity, and pharmacological therapy for 12 weeks. Changes in body weight, waist circumference, blood pressure, lipid profile, and reproductive function were assessed before and after treatment. Statistical analysis was

performed using IBM SPSS Statistics 26.0. Quantitative variables were expressed as mean $\pm$ standard deviation, and differences between baseline and post-treatment values were analyzed using Student's t-test. A p-value of less than 0.05 was considered statistically significant.

Results. The study demonstrated that comprehensive weight reduction therapy produced significant improvements in anthropometric, metabolic, cardiovascular, and reproductive parameters in women with metabolic syndrome. After 12 weeks of treatment, the mean body weight decreased by approximately 13% from baseline, while waist circumference was reduced by an average of 6 ± 2 cm. Clinically significant weight loss exceeding 5% of the initial body weight was achieved in more than half of the participants, whereas 40% of women lost more than 10% of their baseline weight. Positive changes in cardiovascular risk factors were also observed. Systolic and diastolic blood pressure significantly decreased without clinically relevant alterations in heart rate. Biochemical analysis revealed significant reductions in total cholesterol and triglyceride concentrations together with an increase in high-density lipoprotein cholesterol, indicating improvement of lipid metabolism ($p < 0.05$). Restoration of regular menstrual cycles occurred in the majority of participants, accompanied by normalization of menstrual rhythm, duration, and intensity. Women who achieved greater weight reduction demonstrated more pronounced improvements in metabolic status and reproductive function than those with less substantial weight loss. The greatest reduction in cardiovascular risk factors was observed among patients who lost more than 10% of their initial body weight. Overall, the findings indicate that comprehensive weight management combining dietary intervention, physical activity, and pharmacological therapy effectively improves metabolic health, reduces cardiovascular risk, and enhances reproductive function in women with metabolic syndrome.

Conclusions: Comprehensive weight reduction therapy effectively improved anthropometric indices, lipid metabolism, arterial blood pressure, and reproductive function in women with metabolic syndrome. Greater weight loss was associated

with a more pronounced reduction in cardiovascular risk factors and restoration of menstrual function. These findings support weight management as a key component of the comprehensive treatment of women with metabolic syndrome to improve both cardiometabolic and reproductive outcomes.

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