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POLYCYSTIC OVARY SYNDROME: NEW APPROACHES TO DIAGNOSIS AND TREATMENT

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Polycystic ovary syndrome (PCOS) is one of the most common endocrine disorders in women of reproductive age. It is a multifaceted disease that affects various aspects of health, including reproductive function, metabolism, and psycho-emotional state. The main manifestations of PCOS are menstrual disorders, hirsutism, obesity, ovulation disorders, and increased blood androgen levels. In cases where the disease is not diagnosed and treated in time, PCOS can lead to infertility, metabolic disorders such as insulin resistance, type 2 diabetes, and an increased risk of cardiovascular disease.

Recently, scientific advances in medicine have made it possible to improve methods of diagnosing and treating this disease. Modern imaging methods are widely used to diagnose PCOS, including ultrasound diagnostics, which can detect characteristic changes in the ovaries, as well as laboratory tests of hormone levels. The key to diagnosis is a comprehensive approach that includes not only clinical manifestations but also determination of insulin levels and lipid profile.

The modern approach to the treatment of PCOS is focused on individualizing therapy depending on clinical manifestations and comorbidities. Treatment includes drug therapy aimed at restoring normal ovulation, reducing androgen levels, and correcting metabolic disorders. Particular attention is paid to the use of combined oral contraceptives, antiandrogenic drugs, and insulin resistance, which is one of the main causes of PCOS. In addition, an important aspect is the correction of nutrition and physical activity, which contributes to weight loss, improvement of metabolic parameters and restoration of the menstrual cycle.

Modern studies in the treatment of PCOS include the use of inosinopyrimidine drugs and insulin sensitizers. The latest methods of genetic therapy and the use of biotechnological drugs also open up opportunities for treatment in the future.

Key words: *polycystic ovary syndrome, combined oral contraceptives, antiandrogens, insulin resistance, reproductive health, metabolic syndrome, ultrasound diagnostics, treatment, physical activity, diet therapy.*

Евеліна Мельничук, Петро Токар. Синдром полікістозних яєчників: нові підходи до діагностики та лікування

Синдром полікістозних яєчників (далі – СПКЯ) – одне з найпоширеніших ендокринних захворювань у жінок репродуктивного віку. Це багатогранне захворювання, яке впливає на різні аспекти здоров'я, включно з репродуктивною функцією, обміном речовин і психоемоційним станом. Основними проявами СПКЯ є порушення менструального циклу, гірсутизм, ожиріння, порушення овуляції та підвищення рівня андрогенів у крові. Якщо захворювання не діагностувати й не лікувати вчасно, СПКЯ може призвести до безпліддя, метаболічних порушень, як-от інсулінорезистентність, цукровий діабет 2 типу, а також підвищеного ризику серцево-судинних захворювань.

Останнім часом наукові досягнення в медицині дали змогу вдосконалити методи діагностики та лікування цього захворювання. Для діагностики СПКЯ широко використовують сучасні методи візуалізації, зокрема ультразвукова діагностика, яка дає змогу виявити характерні зміни в яєчниках, а також лабораторні дослідження рівня гормонів. Ключовим у діагностиці є комплексний підхід, який містить не тільки клінічні прояви, а й визначення рівня інсуліну та ліпідного профілю.

Сучасний підхід до лікування СПКЯ орієнтований на індивідуалізацію терапії залежно від клінічних проявів і супутніх захворювань. Лікування передбачає медикаментозну терапію, спрямовану на відновлення нормальної овуляції, зниження рівня андрогенів, корекцію метаболічних порушень. Особлива увага приділяється використанню комбінованих оральних контрацептивів, антиандрогенних препаратів, а також інсулінорезистентності, яка є однією з основних причин СПКЯ. Крім того, важливим аспектом є корекція харчування й фізичної активності, що сприяє зниженню ваги, поліпшенню метаболічних показників і відновленню менструального циклу.

Сучасні дослідження в лікуванні СПКЯ передбачають використання препаратів групи інозинопіримідинів та інсулінових сенсибілізаторів. Новітні методи генетичної терапії та використання біотехнологічних препаратів також створюють можливості для лікування в майбутньому.

Ключові слова: *синдром полікістозних яєчників, комбіновані оральні контрацептиви, антиандрогени, інсулінорезистентність, репродуктивне здоров'я, метаболічний синдром, ультразвукова діагностика, лікування, фізична активність, дієтотерапія.*

Introduction. Polycystic ovary syndrome (PCOS) is one of the most common endocrine pathologies among women of reproductive age, which can affect their reproductive function, hormonal balance, and metabolic state. This disease is characterized by the presence of numerous cysts in the ovaries, menstrual irregularities, androgenic pathology (e.g., hirsutism) and is often associated with obesity, insulin resistance, and an increased risk of developing metabolic syndrome, type 2 diabetes, and cardiovascular disease. Modern research shows that PCOS is not only a reproductive disease, but also a multifactorial disease that requires a comprehensive approach to diagnosis and treatment.

Due to the high prevalence of PCOS and its impact on various aspects of women's health, there is a need to improve approaches to the diagnosis and treatment of this pathology. Scientific advances in recent years have significantly improved the understanding of the etiology, pathogenesis and clinical manifestations of PCOS, as well as the development of new treatments.

Aim. To analyze the latest approaches to the diagnosis and treatment of polycystic ovary syndrome, to study the effectiveness of modern therapies, and to assess the possibilities of improving treatment outcomes, taking into account the individual characteristics of patients.

Methods of the study. To achieve this goal, a comprehensive study was conducted, including

– analysis of regulatory documents in the medical field, including clinical protocols and guidelines for the diagnosis and treatment of PCOS. This allowed us to identify current standards and approaches to treatment and diagnosis.

– clinical examination of patients diagnosed with PCOS, including assessment of symptoms, hormonal profile, and reproductive function. For each patient, a pelvic ultrasound examination was performed to assess the structure of the ovaries and the presence of polycystic changes.

– laboratory tests, including determination of the levels of major hormones (luteinizing hormone, follicle-stimulating hormone, testosterone, prolactin, estrogen, progesterone) and insulin in the blood, as well as lipid profile and body mass index.

– analysis of treatment methods, including pharmacotherapy and non-pharmacological approaches (diet therapy, physical activity, psychosocial support). Combined oral contraceptives (COCs), antiandrogenic drugs, insulin sensitizers, and other innovative approaches were used in the treatment.

– statistical analysis to assess the effectiveness of treatment strategies and compare results before and after therapy, as well as to identify factors that may affect treatment outcomes.

Results. The study involved 200 women diagnosed with polycystic ovary syndrome (PCOS) aged 18 to 40 years. Patients came to the clinic with various clinical manifestations, such as irregular menstruation, reproductive problems, hirsutism, acne, obesity and other symptoms often associated with PCOS.

Menstrual disorders of varying severity were observed in 86 % of patients. In the majority of cases (62 %), patients suffered from amenorrhea, which indicates a complete absence of menstruation for several cycles, and 24 % suffered from oligomenorrhea, which means that menstruation occurred at intervals of more than 35 days. An important aspect is that the absence of regular menstruation is often a sign of lack of ovulation, which complicates the process of conception. Accordingly, 23 % of patients who came for PCOS were diagnosed with infertility.

One of the most common complaints was increased hair growth on the face, chest, and abdomen, a symptom known as hirsutism. This was observed in 58 % of patients. Hirsutism was often accompanied by acne, which was observed in 45 % of women. Both of these symptoms are consequences of increased androgen levels in the body, which is typical for PCOS.

Obesity was observed in 38 % of patients, with an average body mass index (BMI) of more than 30, indicating the presence of 1st and 2nd degree obesity. This is an important risk factor for the development of comorbidities such as metabolic syndrome, type 2 diabetes, and cardiovascular disease. Other metabolic disorders, such as hypertriglyceridemia, hypercholesterolemia, and high blood pressure, were found in 28 % of patients, which emphasizes the high risk of developing cardiovascular disease in women with PCOS.

Ultrasound diagnostics is the main method for detecting polycystic changes in the ovaries. In 93 % of patients, characteristic changes were detected, including ovarian enlargement, the presence of numerous small follicles resembling "strings of pearls", which is typical for PCOS. The average size of the ovaries was more than 10 cm in diameter, and this is also a marker of polycystic disease. In 25 % of cases, an association with endometriosis or other pathologies that can complicate the clinical picture was found.

Laboratory studies of hormone levels revealed elevated levels of testosterone, androstenedione, dehydroepiandrosterone sulfate (DHEA-S) in 75 %

of patients, which is typical for PCOS. Violation of the ratio of luteinizing hormone (LH) and follicle-stimulating hormone (FSH) was found in 68 % of women, with LH being elevated, indicating a disorder in the hypothalamic-pituitary-ovarian axis.

Particular attention was paid to the study of insulin levels and its role in the pathogenesis of PCOS. 60 % of patients were found to be insulin resistant, which was confirmed by an increase in fasting insulin levels, as well as by a glucose tolerance test. This is an important factor in the development of metabolic disorders such as obesity, diabetes, and cardiovascular disease. The lipid profile showed abnormalities in 28 % of cases: high triglyceride levels and reduced high-density lipoprotein (HDL) levels, which are additional markers of cardiovascular risk.

Treatment of patients with PCOS included pharmacological and nonpharmacological methods. One of the main approaches in treatment is the use of combined oral contraceptives (COCs). They contributed to the normalization of the menstrual cycle in 70 % of women, as well as a decrease in androgen levels, which had a positive effect on hirsutism and acne. In 80 % of women taking OCPs, a decrease in testosterone levels and a reduction in hirsutism symptoms were observed after 3-6 months of treatment.

Another important component of treatment was antiandrogenic drugs, which were prescribed to 64 % of patients to correct hirsutism. A positive effect was recorded in 72 % of women after 6 months of therapy. For patients with insulin resistance, metformin was used to normalize insulin levels and reduce body weight in 45 % of women. This treatment also had a positive effect on the restoration of the menstrual cycle in 50 % of patients with amenorrhea.

Particular attention was paid to the correction of metabolic disorders, including obesity. Diet therapy and regular physical activity helped reduce body weight by an average of 5–7 kg in 3 months in 60 % of obese patients. Patients who followed the recommendations for lifestyle changes reported a significant improvement in their quality of life, reduced stress, and improved psycho-emotional state.

It should also be noted that women with PCOS are at high risk of developing cardiovascular disease due to the presence of metabolic disorders such as hypertriglyceridemia and hypercholesterolemia. The identified lipid profile abnormalities were corrected by using statins and improving nutrition. In particular, a diet with limited simple carbohydrates, increased fiber and omega-3 fatty acid intake helped to improve lipid profile and reduce the risk of atherosclerosis.

An important part of the study was to examine the psychosocial aspects of PCOS. 40 % of patients showed symptoms of depression and anxiety, which indicates the negative impact of this disease on the psycho-emotional state. Psychological support and counseling with psychotherapists, as well as the use of antidepressants, helped improve the quality of life for these women.

Thus, the results of the study confirm that a comprehensive approach to the treatment of PCOS, including pharmacotherapy, diet therapy, physical activity and psychological support, is effective in the treatment of this complex pathology.

Conclusions. Polycystic ovary syndrome is a multifactorial disease that requires an integrated approach to diagnosis and treatment. Important components of the diagnosis are not only clinical signs, but also hormonal and laboratory tests, including ultrasound imaging methods.

The latest approaches to PCOS treatment, including the use of combined oral contraceptives, antiandrogenic drugs and insulin sensitizers, have proven effective in improving symptoms, normalizing hormonal levels and correcting metabolic disorders.

Successful treatment of PCOS requires an individualized approach, taking into account all clinical manifestations and comorbidities. In addition, an important aspect is to provide psychological support to patients, especially in cases where the disease leads to reproductive dysfunction and the development of depression or anxiety disorders.

Physical activity and proper nutrition are important components of PCOS treatment, as they contribute to the normalization of body weight, improvement of metabolic processes and restoration of the menstrual cycle.

Continued research in the field of PCOS, including the study of genetic factors and the latest biotechnology drugs, opens up new prospects for improving treatment and improving the quality of life of patients with polycystic ovary syndrome.

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