

POLYCYSTIC OVARIAN SYNDROME - A PROBLEM OF MODERN MEDICINE

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<https://doi.org/10.5281/zenodo.7514195>

Abstract: *One of the most urgent problems of gynecological endocrinology is polycystic ovary syndrome (PCOS). In the article, this syndrome is considered as a polyendocrine disease, accompanied by dysfunctions of the pancreas, adrenal cortex, ovaries, hypothalamus and pituitary gland. Information about the etiology, pathogenesis, clinical symptoms and laboratory and instrumental methods of research is given.*

Key words: *polycystic ovary syndrome, infertility, anovulation, hyperandrogenism, insulin sensitivity, insulin resistance.*

СИНДРОМ ПОЛИКИСТОЗНЫХ ЯИЧНИКОВ - ПРОБЛЕМА СОВРЕМЕННОЙ МЕДИЦИНЫ

Аннотация: *Одной из наиболее актуальных проблем гинекологической эндокринологии является синдром поликистозных яичников. В статье этот синдром рассматривается как полиэндокринное заболевание, сопровождающееся нарушениями функций поджелудочной железы, коры надпочечников, яичников, гипоталамуса и гипофиза. Приведены сведения об этиологии, патогенезе, клинической симптоматике и лабораторно-инструментальных методах исследования.*

Ключевые слова: *синдром поликистозных яичников, бесплодие, ановуляция, гиперандрогенения, инсулиночувствительность, инсулинорезистентность.*

INTRODUCTION

Polycystic ovary syndrome is a heterogeneous, hereditary disease with a high prevalence, characterized by chronic anovulation and infertility, hyperandrogenism, and ovarian cystic changes. Therefore, polycystic ovary syndrome remains one of the most relevant topics in obstetrics and gynecology.

The Italian scientist A. Vallisneri first described the picture of the disease in 1721. He described young married women suffering from infertility and obesity, and having two large, lumpy, shiny and whitish ovaries, similar to the eggs of a dove.

MATERIALS AND METHODS

PCOS is mainly found in women of reproductive age, among whom the incidence of the disease is 4-12% [3, 6, 20]. Despite numerous studies, the etiology of PCOS is still not fully understood. It has been established that the causes of the development of the disease can be increased secretion of androgens, past inflammatory and infectious diseases, hereditary predisposition to polycystic ovaries, uterine fibroids, increased levels of prostaglandins, endometriosis, metabolic disorders, endocrine diseases, exposure to harmful external factors, overweight, abrupt change climate, psycho-emotional shocks, dysfunctions of the immune system, excessive physical activity [1, 5, 23, 25].

In the pathogenesis of polycystic ovaries, particular importance is attached to the pathological decrease in insulin sensitivity of peripheral tissues, i.e. to the development of insulin

resistance. As a result of insulin resistance of the body, there is a compensatory hypersecretion of insulin, leading to the development of hyperinsulinemia. Elevated blood insulin levels lead to ovarian hyperstimulation and increased secretion of androgens and estrogens by the ovaries and disruption of ovulation, as the ovaries retain normal insulin sensitivity [1, 7, 21, 22].

Also, particular importance is attached to the pathologically increased insulin sensitivity of ovarian tissue while maintaining normal insulin sensitivity of peripheral tissues. In this case, the level of insulin in the blood is normal, but the response of the ovaries to stimulation with a normal level of insulin is pathologically increased, which again leads to hypersecretion of androgens and estrogens by the ovaries and disruption of ovulation [2, 11, 16, 24].

Some scientists attach importance to an increased level of prostaglandins and other inflammatory mediators in the ovarian tissue and in the follicular fluid in patients with polycystic ovaries, as well as violations of the regulatory hypothalamic-pituitary influences: excessive LH secretion, abnormally increased LH/FSH ratio, increased "opioidergic" and reduced dopaminergic tone in the hypothalamus-pituitary system [2, 8, 10, 19].

The clinical picture of the disease is very individual and varied. On the one hand, the disease can manifest itself as anovulatory infertility, and on the other hand, it can mimic the picture of a hormone-producing tumor. But, despite this, it is the clinical picture that is its main diagnostic criterion, and laboratory and instrumental diagnostic methods are secondary. Of the common clinical symptoms in PCOS are: menstrual disorders (amenorrhea or oligo-, opsomenorrhea), anovulation, infertility, hirsutism, lipid metabolism disorders, acanthosis, excessive hair growth, striae on the abdominal skin, acne, oily skin, seborrhea, androgenic alopecia, mental disorders in the form of depression, dysphoria, etc. [1, 12, 13, 18].

The main method for diagnosing PCOS is ultrasound. Ultrasound signs of PCOS include: an increase in the volume of the ovaries ($> 8-9$ ml), the presence of many follicles with a diameter of 3-8 mm (more than 10-12), a thickened stroma of increased echogenicity, occupying more than 25% of the volume of the ovary. It has been established that the presence of a large number of small follicles is combined with a higher level of LH and testosterone. [1, 4].

RESULTS

Hormonal studies are also decisive in the diagnosis of PCOS, which are based on the determination of protein-bound sex steroids in the blood plasma. In the blood, the level of LH, FSH, testosterone, prolactin, as well as adrenal androgens - DEA-sulfate, 17-hydroxyprogesterone, is determined. Characteristic of PCOS is a high level of androgens, LH and an increased LH/FSH index (2.5-3 or more) due to this [4, 13].

To assess, in women with PCOS, ovarian function against the background of ongoing therapy in dynamics, functional diagnostic tests are used.

The diagnosis of PCOS is currently based on the identification of clinical and laboratory manifestations of hyperandrogenism, assessment of menstrual and reproductive function, as well as ovarian morphology according to ultrasound (ultrasound) [2]. Since 2018, according to the ESHRE recommendations, the criteria for the diagnosis of polycystic ovaries are the number of follicles detected by transvaginal ultrasound at a frequency of 8 MHz in each ovary >20 and/or ovarian volume ≥ 10 ml in the absence of a corpus luteum, cysts or dominant follicles. Ultrasound should not be used for diagnosis PCOS in women with gynecological age <8 years (<8 years after menarche) due to the high incidence of multifollicular ovaries at this age [2]. A computer program has been developed to predict the development of this disease, based on the determination of clinical and anamnestic factors, laboratory and ultrasound markers.

DISCUSSION

The goals of PCOS treatment are: elimination of manifestations of androgen-dependent dermatopathy, normalization of body weight and correction of metabolic disorders, restoration of the ovulatory menstrual cycle and fertility, prevention of late complications.

The main generally accepted principles in the treatment of PCOS are rational nutrition, combined oral contraceptives (COCs), ovulation induction, ovarian drilling and assisted reproductive technologies. Lifestyle modification is considered first-line treatment, regardless of fertility status.

CONCLUSIONS

Based on the foregoing, polycystic ovary syndrome is a polyetiological pathology, the pathogenesis of which involves the central mechanisms of the gonadotropic function of the pituitary gland, local ovarian factors, extraovarian endocrine and metabolic disorders that determine clinical symptoms and morphological changes in the ovaries. Early use of instrumental and laboratory research methods will allow timely diagnosis, initiation of appropriate treatment, thereby contributing to the preservation of fertility and the prevention of late complications of this syndrome.

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