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POLYCYSTIC OVARY SYNDROME

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Abstract: *Polycystic ovary syndrome is a clinical syndrome characterized by moderate obesity, irregular menses or amenorrhea, and signs of androgen excess. Most patients have multiple ovarian cysts. Diagnosis is based on the results of a pregnancy test, measurement of hormone levels, and imaging tests to rule out a virilizing tumor. Treatment is symptomatic.*

Keywords: *clinical syndrome, pregnancy test, hormone levels, virilizing tumor.*

Estrogen levels are elevated, which increases the risk of endometrial hyperplasia and eventually endometrial cancer.Androgen levels are often elevated, which increases the risk of metabolic syndrome and is the cause of hirsutism. The possible presence of hyperinsulinemia due to insulin resistance may contribute to an increase in ovarian androgen production. Prolonged hyperandrogenism increases the risk of cardiovascular disease, including hypertension and hyperlipidemia. The risk of increased androgen levels and associated complications can be as high in women who are not overweight as in those who are.Coronary artery calcification and carotid intima thickening are more common in women with PCOS, suggesting possible subclinical atherosclerosis.Also among these women, type 2 diabetes mellitus and impaired glucose tolerance are more common, and the risk of developing obstructive sleep apnea is increased.Recent studies show that PCOS is associated with low-grade chronic inflammation and that women with PCOS are at increased risk of non-alcoholic fatty liver disease (1).

Symptoms and signs of PCOS

Symptoms of polycystic ovary syndrome usually appear during puberty and increase over time. Premature adrenarche characterized by excess dehydroepiandrosterone sulfate (DHEAS), often early axillary hair growth, body odor, and microcomedonal acne are common.Typical symptoms include moderate obesity, mild hirsutism, and irregular menses, oligomenorrhea, or amenorrhea. However, about half of women with PCOS are of normal weight, and some women are underweight. Body hair may be masculine (eg, on the upper lip, chin, back, thumbs, and toes; around the nipples and along the white line in the lower abdomen). Some women have other signs of virilization, such as acne and temporary thinning of the hair.Other symptoms may include weight gain (sometimes seemingly difficult to control), fatigue, lack of energy, sleep problems (including sleep apnea), mood swings, depression, anxiety, and headaches. Some women are infertile. Symptoms vary from woman to woman.

Areas of thickened and darkened skin (black acanthosis) may appear in the armpits, the back of the neck, skin folds and in the finger and / or elbow folds; the cause is high insulin levels due to insulin resistance.Diagnosis of PCOS in adolescents is difficult because physiological changes during puberty (eg, hyperandrogenism, menstrual irregularities) are similar to PCOS. Thus, separate criteria for the diagnosis of PCOS in adolescents have been proposed (1): however, no consensus has been reached. These criteria require the following two conditions:

Abnormal uterine bleeding (abnormal for age or gynecological age or symptoms that persist for 1 to 2 years).Evidence of hyperandrogenism (based on persistently elevated testosterone levels above adult normal [best evidence], moderate to severe hirsutism, or moderate to severe inflammatory acne vulgaris as an indication for testing for hyperandrogenemia)

Often, a 17-hydroxyprogesterone test is also done to detect non-classical congenital adrenal hyperplasia.Pelvic ultrasonography is usually indicated only if serum androgen levels or degree of virilization indicate the presence of an ovarian tumor. Transvaginal ultrasonography is not commonly used to diagnose PCOS in adolescent girls because it detects polycystic morphology in <40% of girls and does not by itself predict the presence or development of PCOS

Relief of symptoms and improvement of fertility

Weight loss and regular exercise are recommended. They can promote ovulation induction, increase menstrual regularity, increase insulin sensitivity, and reduce acanthosis nigricans and hirsutism. Losing weight can also help improve fertility. However, weight loss is unlikely to benefit normal weight women with PCOS.Hormonal contraceptives are the first line of treatment for menstrual irregularities, hirsutism, and acne in women with PCOS and those who do not wish to conceive. Intermittent courses of progestins (eg, medroxyprogesterone acetate 5 to 10 mg orally once daily for 10 to 14 days every 1 to 2 months) or combined oral contraceptives are usually given to women to reduce the risk of endometrial hyperplasia and cancer. This treatment results in a decrease in circulating androgen levels and generally helps to form a more regular menstrual cycle.

Metformin 500 to 1000 mg twice daily is used to increase insulin sensitivity in women with PCOS, irregular periods, and diabetes or insulin resistance if lifestyle changes are ineffective or if they cannot take or tolerate hormonal contraceptives. Metformin can also lower free testosterone levels. When using metformin, it is necessary to measure the level of glucose in the blood serum, as well as conduct periodic studies of kidney and liver function. Since metformin can induce ovulation, contraception is necessary if pregnancy is not desired. Metformin helps correct metabolic and glycemic abnormalities and makes menstrual cycles more regular, but it has little to no positive effect on hirsutism, acne, or infertility.Women who wish to become pregnant should be referred to fertility specialists. Infertility drugs (such as clomiphene) are used.

Clomiphene is currently the first line therapy in the treatment of infertility. Helpful for weight loss as well. Avoid hormone therapy, which may have a contraceptive effect. Letrozole, an aromatase inhibitor, can also stimulate ovulation. You can also try other fertility drugs. These include follicle-stimulating hormone (FSH) to stimulate the ovaries, a gonadotropin-releasing hormone (GnRH) agonist to stimulate the release of FSH, and human chorionic gonadotropin (hCG) to stimulate ovulation.Because women with PCOS have a higher risk of pregnancy complications (including gestational diabetes, preterm birth, and preeclampsia) that are exacerbated by obesity, it is recommended that a pre-assessment of body mass index, blood pressure measurement, and oral glucose tolerance test be performed. If clomiphene and other drugs are ineffective or there are other indications i to laparoscopy, laparoscopic ovarian drilling may be considered; however, possible long-term complications of drilling (eg, adhesions, ovarian failure) should be considered. Ovarian drilling consists of using an electrocautery or laser to drill holes in small areas of the ovaries that produce androgens. Resection of the ovary is not recommended.Physical measures (eg, bleaching, electrolysis, plucking, waxing, epilation) may be used for hirsutism. To remove unwanted facial hair, twice daily use of eflornithine 13.9% cream (not registered in the Russian Federation) can help. In adult women who do not want to become pregnant, hormonal therapy can be used, which reduces the level of androgens or spironolactone. Spironolactone 50–100 mg twice daily is effective, but because this drug may be teratogenic, effective contraception is required. Cyproterone, an antiandrogen (not available in the US), reduces unwanted body hair in 50-75% of affected women. Weight loss reduces androgen production in obese women and thus may slow down hair growth.

GnRH agonists and antagonists are being studied as treatments for unwanted body hair. Both groups of drugs suppress the production of sex hormones by the ovaries. However, both can cause bone loss and lead to osteoporosis.Acne can be treated with conventional medications (benzoyl peroxide, tretinoin cream, topical and general antibiotics). Systemic isotretinoin is used only in severe cases.

Control of comorbidities Because PCOS has an increased risk of developing depression and anxiety, women and adolescents with PCOS should be screened for these problems based on their history, and if a problem is identified, they should be referred to a mental health professional and/or treated as needed.Overweight or obese adolescents and women with PCOS should be evaluated for symptoms of obstructive sleep apnea using polysomnography and treated as needed.

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