

REVIEW ON TYPES OF PCOS AND ITS TREATMENT

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ABSTRACT

Polycystic ovary syndrome is a hormonal disorder causing enlarged ovaries with small cysts on the outer edges. It may cause cysts in the ovaries high level of male hormones and irregular periods. It can be diagnosed by pelvic exam, blood test for measuring the levels of hormones such as Follicle-stimulating hormone and luteinizing hormone and ultrasound. There are four types of Polycystic ovary syndrome, Insulin resistant Polycystic ovary syndrome, post pill Polycystic ovary syndrome, inflammatory Polycystic ovary syndrome, adrenal Polycystic ovary syndrome. Insulin resistant Polycystic ovary syndrome is the result of high of insulin it may produce high level of androgen. post pill due to oral contraceptive which containing androgen which is suppressing form of progestin. Inflammatory Polycystic ovary syndrome, high level of inflammation can stimulate the ovaries to make too many androgen hormones. Adrenal Polycystic ovary syndrome is due to high level of DHEAS in the adrenal glands. treatment may vary according to the type's insulin resistance is treated by Metformin. Adrenal polycystic ovary syndrome is treated by combination pill cyproterone and ethinyl estradiol. Inflammatory Polycystic ovary syndrome treated by combination of Chromium, Vitamin D₃, Myo-inositol and D-inostol, post pill Polycystic ovary syndrome is treated by Clomiphene citrate.

KEYWORDS: Insulin resistant, Post pill, Inflammatory, Adrenal, DHEAS, cyproterone and Ethinyl estradiol-clomiphene citrate.

INTRODUCTION

Polycystic ovary syndrome (PCOS) is a hormonal disorder common among women of reproductive age. Women with Polycystic ovary syndrome have infrequent or prolonged menstrual periods or excess male hormone (androgen) levels. The ovaries may develop numerous small collections of fluid (follicles) and fail to regularly release eggs.^[1] Polycystic ovary syndrome affects a woman's ovaries, the reproductive organs that produce Estrogen and Progesterone hormones that regulate the menstrual cycle. The ovaries also produce a small number of male hormones called androgens.^[2,3]

The release of an egg each month is called ovulation. Follicle-stimulating hormone (FSH) and luteinizing hormone (LH), which are produced in the Pituitary gland control's ovulation.^[4] FSH stimulates the ovary to produce a follicle a sac that contains an egg and then Leut Triggers the ovary to release a mature egg. PCOS is a "syndrome," or group of symptoms that affects the ovaries and ovulation.^[17] Its three Main features are:

- Cysts in the ovaries
- High levels of male hormones
- Irregular or skipped periods

In PCOS, many small, fluid-filled sacs grow inside the ovaries. The word "polycystic" means "many cysts". These sacs are actually follicles, each one containing an immature egg. The eggs never mature enough to trigger ovulation. The lack of ovulation alters levels of estrogen, progesterone, FSH, and LH. Progesterone levels are lower than usual, while androgen levels are higher than usual.^[03]

Common symptoms of PCOS

> Irregular periods

A lack of ovulation prevents the uterine lining from shedding every month, Heavy bleeding. The uterine lining builds up for a longer period of time. The periods you do get can be heavier than normal, Hair growth more than 70 percent of women with this condition grow hair on their face and Body including on their back, belly, and chest.

Excess hair growth is called hirsutism. Male hormones can make the skin oilier than usual and cause breakouts on areas like the face, chest, and upper back. Weight gain upto 80 percent of women with Polycystic ovary syndrome are overweight or have obesity, male pattern baldness.

Hair on the scalp gets thinner and may fall out. Darkening of the skin. Dark patches of skin can form in body creases like those on the neck, in the groin, and under the breasts. Headaches. Hormone changes can trigger headaches in some women.^[03,05,04]

Diagnosis

➤ Pelvic exam

The doctor visually and manually inspects reproductive organs for masses, Growths or other abnormalities.

➤ Blood tests

Blood may be analyzed to measure hormone levels. This testing can exclude possible causes of menstrual abnormalities or androgen excess that mimics Polycystic ovary syndrome. Additional blood testing to measure glucose tolerance and fasting cholesterol and triglyceride levels.^[01,02]

➤ Ultrasound

Doctor checks the appearance of your ovaries and the thickness of the lining of your uterus. A wand like device (transducer) is placed in vagina (transvaginal ultrasound). The transducer emits sound waves that are translated into images on a computer screen.^[01,02]

TYPES OF PCOS

- Insulin-resistant PCOS
- Post-pill PCOS
- Inflammatory PCOS
- Adrenal PCOS^[14,15,16]

Mechanism of types of PCOS

Insulin resistance PCOS

Insulin-resistant Polycystic ovary syndrome the most common type of Polycystic ovary syndrome and is the result of high levels of Insulin in the body which can also be referred to as metabolic syndrome or pre-diabetes.^[21,24,25,26] Insulin resistance is what happens when the cells in your muscles, fat and liver stop responding well to insulin, which increases blood sugar levels and forces your pancreas to pump out even more insulin.^[22,23] Higher levels of circulating insulin increase the production of androgens in women which interferes with ovulation and leads to all of the other symptoms of high androgens.^[18,19]

Symptoms

- Androgen-excess
- Insulin-resistant PCOS can also cause fatigue
- Brain fog
- Frequent thirst and urination
- Weight gain

Post-pill PCOS

Oral contraceptives that contain an androgen-suppressing form of progestin such as Yasmin, Yaz or Ginet are often the worst offenders in this department.^[26,27,28]

Inflammatory PCOS

Inflammatory PCOS is where chronic inflammation in the body is the primary driver of elevated androgens.^[29]

High-level inflammation stemming from an overactive immune system can stimulate the ovaries to make too many androgen hormones, which can interfere with ovulation and lead to irregular periods.^[30]

Symptoms

- Persistent fatigue that isn't remedied with sleep
- IBS-type bowel irregularities
- Headaches
- Joint pain
- Skin conditions such as eczema, hives or psoriasis.

Adrenal PCOS

Adrenal Polycystic ovary syndrome is not driven by insulin-resistance, hormonal contraceptive use or Inflammation, but rather the body's response to stress. Women with adrenal Polycystic ovary syndrome either experiencing high levels of stress, or their bodies are reacting abnormally to stress.^[14] In either case, they will have high levels of DHEAS an androgen produced in the adrenal glands and normal levels of other androgens produced in the ovaries such as testosterone and androstenedione.^[17]

Treatment of PCOS

Treatment for Insulin resistance PCOS

Metformin has been the mainstay of treatment for Irregular periods and Impaired glucose tolerance in PCOS women over the past decade.^[32,33] Metformin is biguanide that acts principally on the liver to inhibit hepatic gluconeogenesis.^[34] It also inhibits acetyl-CoA carboxylase activity and suppresses fatty acid production.^[35] Metformin acts on skeletal muscle to inhibit lipid production and acts peripherally on adipose tissue to stimulate glucose transport and uptake. Metformin reduces insulin levels and promotes improved insulin receptor activity.^[36]

Metformin may also have direct and indirect effects on the ovary with respect to insulin action and steroidogenic enzymatic activity.^[35] In the endothelium, Metformin seems to improve nitric oxide vasodilatory effects.^[33] Many other mechanisms of action have studied in both animal and human models but consistent effects are not always demonstrated with local tissue concentrations that result from therapeutic doses.^[36]

Treatment for Adrenal PCOS

Cyproterone+ Ethinyl Estradiol is used in polycystic ovarian syndrome. It is a combination of two hormonal medicines.^[38] Cyproterone acetate is anti-androgen it suppresses the action of testosterone it works by blocking the over production of androgens in the ovaries. Ethinyl Estradiol enhances the effect of Cyproterone by reducing the number of androgens in the blood.^[39] The direct anti-androgenic effect of cyproterone is blockage

of the binding dihydrotestosterone to the specific receptors.^[40] Cyproterone acetate is metabolized 15 beta-hydroxy cyproterone acetate, which retains its anti-androgenic activity.^[41] They regularize the menstrual cycle in PCOS, Acne, Hirsutism.^[42] Available brand name for Cyproterone + Ethinyl Estradiol: Krimson, Diane, Ginette, My pill, Elestra, Frewil, Estranon.

Treatment for Inflammatory PCOS

Chromium Picolinate+ D-Chiro Inositol + Myo-Inositol + Vitamin D3 is combination of four medicines.^[43,44] Chromium picolinate is a supplement form of chromium and it is believed to improve metabolism and promote weight loss.^[45] Vitamin D3 helps to maintain an optimum level of calcium in the body to keep bones strong.^[46] Reduction of inflammation. D- Chiro Inositol and Myo-Inositol helps to correct hormonal imbalance in the body to achieve Ovulation and menstrual cycle regularly.^[47,48,49]

Available brand name for Chromium Picolinate + D-Chiro Inositol + Myo- Inositol + Vitamin D3: Zipcoz, PCOShe.

Treatment for Post pill PCOS

Clomiphene is a synthetic chemical that binds to estrogen receptors in the brain to estrogen receptors in the brain and causes pituitary.^[50,51] Follicle-stimulating hormone to raise and luteinizing hormone.^[52,53] This action stimulates the growth of the ovarian follicle and thus initiates ovulation and effective initiating menstruation.^[54,55]

Available brand name for Clomiphene citrate: Clomid, Enphene, Q-star CL.

DISCUSSION

PCOS is becoming a more prevalent endocrine disorder among women adolescence and reproductive age. There is currently no cure of Polycystic ovary syndrome.^[56,57] The major symptoms of Polycystic ovary syndrome it can be diagnosed prior to blood test and ultra sound by absence of menstruation i.e. amenorrhea. There is wide range of therapeutic options with potential advantage for the management of metabolic comorbidities in Polycystic ovary syndrome. Metformin is used for the treatment of diabetes and also helps to produce the androgen excess. It reduces hepatic glucose production; it is used against insulin resistance as it improves the peripheral blood glucose levels and provide good response to ovulation induction.^[59]

Clomiphene citrate is mostly used for infertility treatment. Clomiphene citrate causes ovulation induction by increasing follicle-stimulating hormone antagonizing Estrogen receptors at hypothalamus -pituitary axis. These are selective estrogen receptor modulator are said to be first line treatment in Polycystic ovary syndrome. These are referred as antiestrogenic. They boost up the Gonadotropin-releasing hormone it pulses frequency and

initiate follicle-stimulating hormone release from pituitary gland resulting in follicular development.^[60,61]

Myo-inositol and D-inositol glycans have been reported to exert beneficial effect at metabolic, hormonal, ovarian level and reduction in inflammatory PCOS.^[62,63] Cyproterone acetate and ethinyl estradiol both are progestogen and estrogen hormone which is treats Polycystic ovary syndrome symptoms such as acne, hirsutism, irregular periods and reducing the amount of androgen in blood and regularize menstrual cyclic in Polycystic ovary syndrome.^[64,65]

Treatment given to the women's suffering from experiencing the large number of adverse effects individually each drug develops a side effect like clomiphene citrate results in increases urinary efficiency and breast tenderness. Metformin is not approved by the FDA for the treatment of PCOS. It causes nausea, lethargy, metallic taste. Chromium picolinate+ D-inositol+ Myo-inositol+ Vitamin D₃ causes rash, paresthesia, postural hypotension, dizziness, flushing. Cyproterone and ethinyl estradiol cause developing blood clots, difficulty in breathing. In order to reduce these side effects scientists are searching for newer treatment with lower side effects.

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