

## Treating Polycystic Ovary Syndrome with TCM

### Polycystic Ovary Syndrome (PCOS)

Polycystic ovary syndrome (PCOS) is the most common endocrine disorder among female in reproductive age. The name of the condition comes from the appearance of numerous small cysts along the outer edge of each ovary and enlarged ovaries. In PCOS, the eggs in these follicles do not mature and are not released from the ovaries; instead, they can form very small cysts in the ovary.

Women are usually diagnosed when in their 20s or 30s, but PCOS may also affect teenage girls. The symptoms often begin when a girl's periods start. Women with this disorder often have a mother or sister who has symptoms similar to those of PCOS. The main features are obesity, anovulation or amenorrhea, acne, and excessive hair growth. It is thought to be one of the leading causes of female infertility.

### Causes

The exact cause of PCOS is unknown. However, it is related to an imbalance in the female sex hormones; in PCOS, the pituitary gland may secrete high levels of LH and the ovaries may produce excess androgens which disrupts the normal menstrual cycle and may lead to other signs and symptoms of PCOS.

Although it is not completely understood why and how the changes in the hormone levels occur, study results suggest that there are some factors may attribute to the development of this disease, such as insulin resistance, diabetes, obesity, low-grade inflammation, family history, or abnormal fetal development.

### Signs and Symptoms

The symptoms and severity of PCOM vary greatly among women. Common symptoms of PCOS include:

- **Menstrual abnormalities** Irregular, more or less frequent, very scanty or very heavy, or absent periods are the most common characteristics of PCOS.
- **Development of male sex characteristics** Elevated levels of male hormones, androgens may result in physical signs, such as decreased breast size; deepening of the voice; enlargement of the clitoris; hirsutism (excess facial and body hair); and adult acne or severe adolescent acne.
- **Obesity** About 50% of women with PCOS are overweight or obese.

- **Prediabetes or type 2 diabetes** Many women with PCOS have high blood glucose level and type 2 diabetes due to significantly high insulin resistant.
- **Acanthosis nigricans** This is the medical term for dark or thick skin markings and creases around the armpits, groin, neck, and breasts due to insulin sensitivity

## Diagnosis

There's no specific test to definitively diagnose PCOS; it is diagnosed by ruling out other possible disorders presenting with similar your signs and symptoms. Other causes of irregular or absent menstruation and hirsutism, such as congenital adrenal hyperplasia, Cushing's syndrome, hyperprolactinemia, androgen secreting neoplasms, and other pituitary or adrenal disorders, should be investigated.

The following methods are often used in the diagnosing process.

- **Medical history and physical examination** They are specifically looking for menstrual pattern, obesity, hirsutism, blood pressure, and the absence of breast development.
- **Pelvic examination** The health care provider may find signs of masses, growths or other abnormalities of the reproductive organs during a pelvic exam.
- **Blood tests** Serum levels of different hormones, including estrogen, FSH, LH and androgens (male hormone), can be measured by blood tests. Additional blood testing may include fasting cholesterol and triglyceride levels and glucose intolerance and insulin resistance tests, prolactin level test, and thyroid function test.
- **Pelvic ultrasound** Pelvic ultrasound is a major diagnostic tool as it can show the appearance of the ovaries and the thickness of the lining of the uterus.
- **Laparoscopy** Pelvic laparoscopy may reveal a thickened, smooth, pearl-white outer surface of the ovaries.

## Treatment

Medical treatment of PCOS is focused on lowering of insulin levels, regulating menstruation, restoring fertility, treating hirsutism or acne, and preventing complications, such as endometrial hyperplasia and endometrial cancer.

### Losing weight

General interventions that help to reduce weight or insulin resistance can be beneficial for all these aims, because they address what is believed to be the underlying cause of the syndrome. Regular exercise and maintaining a healthy weight will help reduce the hormonal imbalance, restore ovulation and fertility, and improve acne and hirsutism. Losing weight has been shown to help with diabetes, high blood pressure, and high cholesterol. Even a weight loss of 5% of total body weight has been shown to help with the imbalance of hormones and also with infertility.

### Medications

- Birth control pills Oral contraceptives can help regulate menstrual cycles. Standard contraceptive pills may be effective in reducing hirsutism as well.
- Clomiphene citrate, FSH Oral anti-estrogen medications (Clomid and Serophene) or FSH medications stimulate ovulation and can be used to regulate menstruation, or more likely, to help with infertility.
- Glucophage (Metformin) This medication reduces insulin resistance by improving insulin sensitivity and prevents type 2 diabetes. It may also improve the symptoms of PCOS and help regulate ovulation and menstrual cycles.
- Anti-androgen medications Spironolactone and Flutamide can be used to reduce hirsutism and acne.
- Eflornithine cream Acting directly on the hair follicles, Eflornithine (Vaniqa) may slow the growth of unwanted facial hair.

## Surgery

Laparoscopic ovarian drilling, a procedure to remove a section of the ovary or drill holes in the ovaries, can be used for the PCOS patients. It is used to induce ovulation by reducing androgen levels and treat infertility; however, the effects are temporary.

## Possible Complications

The main complication of endometriosis is infertility. Women with PCOS may have trouble becoming pregnant because they experience infrequent ovulation or a lack of ovulation. In fact, PCOS is the most common cause of female infertility.

PCOS also increases the risk of following conditions:

- Insulin resistance or Type 2 diabetes
- High blood pressure
- Cardiovascular disorders
- Strokes
- Endometrial hyperplasia and endometrial cancer
- Abnormal uterine bleeding
- Autoimmune thyroiditis
- Depression and/or anxiety

## PCOS in Traditional Chinese Medicine

There is no defined disease name for PCOS in traditional Chinese Medicine; however, PCOS belongs to the TCM gynecology disease categories of irregular menstruation, amenorrhea, infertility, and abdominal mass.

## Etiology and Pathogenesis

The development of PCOS in TCM is attributed to deficiency of Kidney Yang and to Phlegm-Damp accumulation. The kidney in TCM is the organ system that is regarded with any genetic disorder and considered the root cause in PCOS. Long-term Kidney Yang deficiency is often accompanied with deficiency of Spleen which fails to perform its function of transforming and transporting fluids in the lower burner (area below the umbilicus) leading to damp- phlegm accumulation. It is Phlegm-Dampness that causes the formation of small cysts in the ovaries, while the deficiency of Kidney Yang leads to irregular menstruation, amenorrhea, or infertility. In many cases, there is also Qi and Blood Stagnation.

The factors that may lead to PCOS in TCM prospective are:

- Congenital weakness, early marriage and/or excessive sexual activity consuming the Kidney Qi
- Excessive consumption of greasy and rich food or improper dietary habits leading to impairment of the spleen and stomach function and formation of phlegm-dampness
- Emotional stress or retention of the blood after delivery leading to stagnation of Liver Qi as well as blood stasis
- Endogenous heat / fire from prolonged stagnation leading to disharmony between Qi and Blood

## Pattern Differentiation

In TCM, PCOS is developed from deficiency of the kidney primarily, and stagnation of phlegm-damp, Qi and blood, or heat secondarily. Clinically the patterns for PCOS are divided into kidney Yang deficiency, phlegm-dampness, liver depression transforming into fire, and Qi and blood stagnation.

- **Kidney Yang deficiency** Main symptoms in this pattern are delayed menstruation with scanty and light-colored menses, gradual amenorrhea, occasional irregular menstruation, infertility, dizziness and tinnitus, aching and weak sensation in the loins and knees, cold sensation in the body and cold limbs, clear and profuse urine, loose stool, sexual frigidity, obesity, pale tongue with whitish thin coat, and deep-thin pulse.
- **Phlegm-dampness** Main symptoms are scanty periods, delayed menstruation or amenorrhea, infertility, leukorrhea, dizziness and heavy sensation in the head, chest oppression, nausea, lassitude of limbs, profuse sputum in the throat, loose stool, obesity, whitish greasy tongue coat, and slippery pulse.
- **Liver depression transforming into fire** Main symptoms are amenorrhea, scanty periods, irregular menstruation, infertility, thick hair, acne, distending pain in the chest, hypochondria or breasts, dry mouth with preference for drinking water, constipation, yellowish thin tongue coat, and rapid, wiry pulse.
- **Qi and blood stagnation** Main symptoms are delayed menstruation, scanty periods with clots, abdominal pain during menstruation, amenorrhea, infertility, mental depression, distending fullness in the chest and hypochondria, red tongue edge and tip or purplish tongue, and deep, wiry pulse.

## Treating PCOS with TCM

TCM treatment for PCOS mainly concentrates on nourishing the kidney followed by strengthening the spleen to regulate Qi and resolve phlegm, soothing the liver to relieve depression and reduce fire as well as invigorating the blood to resolve stasis and regulating menstruation. Treatment can be modified to address what pattern is most prevalent and treatment should be adjusted as indicated by the patient's condition.

## Acupuncture

Acupuncture is a safe and effective treatment for PCOS as the adverse effects of pharmacologic interventions are not expected by women with PCOS. Acupuncture treatments can help regulate menstruation and relieve symptoms of PCOS by stimulating the meridians related to the reproductive system (i.e. Chong and Ren channels), increasing blood flow to the ovaries, promoting the proper functioning of the reproductive organs, and contributing to normalizing hormone levels. Additionally, acupuncture treatments can assist in weight loss and help with hyperglycaemia through increasing insulin sensitivity and decreasing blood glucose and insulin levels, and reducing cortisol levels.

Studies have found that acupuncture and low frequency electro-acupuncture affect PCOS symptoms and regulate ovulation via modulation of endogenous regulatory systems, including the sympathetic nervous system, the endocrine system and the neuroendocrine system (Stener-Victorin et al., 2002). Several studies showed that acupuncture significantly increases  $\beta$ -endorphin levels for periods up to 24 hour and may have regulatory effect on FSH, LH and androgen.  $\beta$ -endorphin increased levels secondary to acupuncture affects the hyperthalamic–pituitary–adrenal (HPA) axis through promoting the release of ACTH through stimulation of its precursor pro-opiomelanocortin synthesis (Lim and Wong, 2010).

## Herbal Medicine

### Chinese Herbs

In most cases of Gynecological treatment in TCM, Chinese herbal medicines are recommended to increase the effect of acupuncture treatments and to correct imbalance of the body. There are different herbs which can help to dissolve the waxy coating found on the ovaries and also to encourage normal ovulation. Each patient will be evaluated and then treated according to their particular pattern and unique features and symptoms of PCOS.

The examples of herbal medicine used for each pattern differentiation are:

- **Kidney Yang deficiency** Modified You Gui Wan, composed of Shu Di Huang, Shan Yao, Shan Zhu Yu, Gou Qi Zi, Lu Jiao Jiao, Tu Si Zi, Du Zhong, Dang Gui, Rou Gui, and Zhi Fu Zi. This formula is used to nourish the kidney to replenish essence as well as to regulate and nourish the Ren and Chong channels.
- **Phlegm-dampness** Cang Fu Dao Tan Tang composed of Cang Zhu, Xiang Fu, Fu Ling, Fa Ban Xia, Chen Pi, Gan Cao, Dan Nan Xing, Zhi Ke, Shen Qu, and Sheng Jiang. This formula is used to resolve phlegm, eliminate dampness, and regulate Qi and menstruation.

- **Liver depression transforming into fire** Modified Dan Zhi Xiao Yao San composed of Mu Dan Pi, Zhi Zi, Dang Gui, Bai Shao Yao, Chai Hu, Bai Zhu, Gan Cao, and Chuan Niu Xi. This formula is used to soothe the liver to relieve depression and to reduce fire.
- **Qi and blood stagnation** Modified Ge Xia Zhu Yu Tang composed of Dang Gui, Chuan Xiong, Chi Shao Yao, Tao Ren, Hong Hua, Zhi Ke, Yan Hu Suo, Wu Ling Zhi, Mu Dan Pi, Bai Shao Yao, Xiang Fu, and Gan Cao. This formula is used to regulate Qi, invigorate blood, resolve stasis, and regulate menstruation.

According to the research result analyzing 125 clinical trials of using Chinese herbal medicine for treatment of PCOS, either alone (54 studies) or in combination with conventional drugs (71 studies), majority of the identified trials reported promising effects of Chinese herbal medicine. Potential mechanism of herbal medicine in PCOS may be related to regulation of hormones such as LH, FSH, estrogen and testosterone (Lim, et al. 2010).

In a study designed to compare the of a common Chinese herbal formula (Tian Gui Fang) with metformin in PCOS patients, the researchers have found that both metformin and the Chinese herbal formula could reduce the high serum levels of insulin in patients and induce regular ovulation (Hou, et al., 2000). Another herbal formula, Bu Shen Yi Qi He Xue Tang was also found to improve pinopodes expression on endometrial surface, eventually better the uterine receptivity and improve the embryo implantation (Huang et al., 2004).

### Other Herbs for PCOS

The following herbs have all been found to benefit PCOS sufferers by regulating hormone levels.

- **Chaste tree (Vitex Agnus castus)** It is one of the most important herbs for PCOS because it helps stimulate and normalize the function of the pituitary gland, which controls the release of luteinising hormone (LH). Chaste tree has been successfully trialed in the treatment of PCOS as well as infertility. It enhances progesterone levels, which lengthen the menstrual cycle. Chaste tree has been shown to improve fertility due to its effects on decreasing estrogen and androgens which, when elevated, are responsible for cycles with no ovulation (anovulation).
- **Saw Palmetto (Serenoa repens)** This North American palm tree has been found to reduce excess levels of the male hormone testosterone and to help with excessive hair growth.
- **Astaxanthin** Used in conjunction with saw palmetto, this powerful antioxidant herb lowers testosterone and other male hormone levels.
- **Rehmannia, Rhodiola, Siberian Ginseng and Withania** These adrenal tonics support the adrenal stress response and help the adrenal glands return to a state of balance.
- **Peony (Paeonia lactiflora)** It reduces elevated testosterone as well as modulates estrogen and prolactin.
- **Licorice** Especially combined with peony, this herb helps regulate hormones, reduce androgen levels and improve the LH to FSH ratio.
- **Gymnema** It is helpful in reducing carbohydrate and sugar cravings, thereby assisting in weight loss. It is one of the most significant herbs to improve insulin resistance.
- **Tribulus** It helps restore menstrual regularity and regulate ovulation.

## Nutrition

Because of the insulin resistance and impaired glucose metabolism found in PCOS, nutritional modification is necessary in preventing and treating signs and symptoms of PCOS. The best natural management for insulin resistance and impaired glucose metabolism is to lower the level of sugar intake from the diet, and eliminate the ingestion of any food substance that the body can utilize as simple sugar. It is also important to eat regularly to moderate glucose load and minimize insulin resistance; having small meals, including some protein and good fat, every 3-5 hours is recommended.

### What to Eat

- **More vegetables, fruits, whole grains** These foods have low glycemic index (GI) and rich in fibers. Leafy greens, such as kale, broccoli, collard greens, bok choy, cabbage and rapini, contain indole-3 carbinol which helps the liver in regulating glucose and hormone metabolism. Fruits, like berries, are lower on glycemic index and high in anti-oxidants. Whole grains, such as oat, barley, brown rice and quinoa, have complex carbohydrate which is more beneficial in stabilizing the blood glucose level.
- **Bitter melon, fenugreek, cinnamon** They can help regulate blood glucose and reduce insulin resistance.
- **Legumes** Beans, peas, lentils, and edamame are naturally low in fat and high in dietary fiber. They also are high in folate, phosphorus, potassium, iron, zinc, calcium, and selenium. Legumes have many of the B vitamins and are rich in antioxidants which can prevent cell damage.
- **Protein** It is important to include adequate protein with every meal, by adding seafood, eggs, nuts and seeds, and organic meat (it is safe to have organic and grass-fed meat since it changes the fats from healthy omega 3 fats to omega 6's when meat has been grain-fed).

### What to Avoid

- **Avoid refined carbohydrates** The body immediately turns refined carbohydrates into glucose. Therefore, it is very important for women with PCOS to completely avoid refined carbohydrates to stabilize the blood glucose level. Foods with refined carbohydrate include: sugar (from soda, candy, syrup and artificial sweeteners), white flour and products made from them (pasta, breads, desserts, etc.), white rice, most breakfast cereals, rice cakes, and popcorn. Artificial sweeteners are shown to affect the insulin levels the same way sugar does.
- **Avoid milk and dairy products (cheese and yogurt)** They are considered as 'damp' foods in TCM and may exacerbate the problem. Try substituting unsweetened almond milk as an alternative to cow's milk.
- **Limit alcohol and caffeine** Excessive alcohol and caffeine consumption can impair the function of the liver in regulating glucose and hormone level.

## Massage

Femoral massage can increase blood flow to the pelvic organs, providing more nourishment to the uterus and ovaries. Perform the femoral massage three times as one course, two courses a day.

Compress the large artery just beneath the crease in the groin between thigh and lower abdomen. This is the femoral artery, which comes from the iliac artery. The iliac artery gives off branches which supply blood flow to the uterus, fallopian tubes and ovary. (The ovary has an additional blood supply which branches off the same arterial section that supplies the kidneys.)

When the flow has ceased and you feel the pulsation end at your finger tips, hold for 30-45 seconds. The blood is now backing up and increasing the pressure gradient in the iliac arteries and forcing more blood into the pelvic arteries, flooding the pelvic organs with more blood.

When the hold is released, you should feel a sensation of warmth rushing down your leg as the blood supply returns to the lower extremity.

Do not perform this exercise if you are pregnant or have hypertension, heart disease or circulatory problems including aneurisms, varicose veins, phlebitis, thrombosis, or a history of strokes or detached retinas. If you have diabetes or similar disorder which affects the circulation, but can perform normal exercises and daily routines, practice on one side at a time and repeat on the opposite side. Perform the femoral massage three times on each side, twice daily if possible.

## Exercise

In addition to having a healthy diet, exercise plays an important role in preventing and treating PCOS. Regular exercise improves insulin sensitivity in skeletal muscle and fat tissue, reducing insulin levels. Exercise is most effective when it combines resistance training with cardiovascular or aerobic activity.

- **Aerobic exercise.** Aerobic exercise consumes oxygen and helps to burn carbohydrates. This exercise is exemplified by running, fast walking, and swimming. Because carbohydrates are consumed during aerobic exercise, it is associated with improvement in insulin resistance and sugar utilization as well as hormone balance.
- **Anaerobic exercise.** Anaerobic exercise classically uses fats as an energy source. That is why weight trainers consume medium-chain triglycerides during their workouts. Weight training also helps balance hormones such as growth hormone and testosterone. Because fat cells (adipocytes) are known to produce inflammatory mediators and estrogens, limiting them will also reduce estrogen dominance.

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