



Environmental Medicine Update

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Polycystic Ovarian Syndrome: A Natural Treatment Approach

Abstract

Polycystic ovarian syndrome (PCOS) affects thousands of women in the US and is a common cause of infertility. Androgen excess and insulin resistance are hallmarks of the disorder. Understanding the pathogenesis of PCOS helps understand the breakthroughs in treatments available to practitioners. This review will examine naturopathic treatment options for women with PCOS.

Introduction

Polycystic ovarian syndrome (PCOS) is the most common endocrinopathy of reproductive-age women in the US, affecting roughly 10% of this population. It accounts for 75% of women with amenorrhea and 85% of women with androgen excess/hirsutism.¹ In 1935, Stein and Leventhal published their report of seven women with unexplained anovulation, amenorrhea, hirsutism, obesity, and enlarged polycystic-appearing ovaries. Ovarian wedge resection resulted in two pregnancies and regular cycles in remaining five. Ovarian wedge resection involves removing a section of the tissue that then allows ovulation to occur, although the exact mechanism is unclear.² Since then, much has been learned about this disorder in terms of clinical manifestations, etiology, diagnosis, and treatment.

Clinical Manifestations

The most common signs and symptoms that women with PCOS present with include menstrual irregularity, hirsutism, acne, acanthosis nigricans, infertility, obesity, and increased risk of cardiovascular disease. Menstrual irregularity presents as either amenorrhea or oligomenorrhea due to anovulatory cycles. A small percent of women with PCOS, even though they are anovulatory, continue to menstruate regularly. It is estimated that 40% of hirsute women who have normal menses are anovulatory.³ Hirsutism and acne in women with PCOS are signs of androgen excess and are present

in 70% of women with PCOS and 10% of women without PCOS.⁴ PCOS is a common cause of female infertility due to anovulatory cycles, and infertility is frequently the initial reason the patient seeks medical advice. Infertility affects 75% of obese women with PCOS.⁵ The obesity seen with PCOS is typically characterized by an increase in the waist circumference (> 35 inches) as opposed to overall obesity. This type of obesity is associated with insulin resistance, glucose intolerance, and dyslipidemia.^{6,7} Dyslipidemia is common in women with PCOS; up to 70% of PCOS patients in the US have dyslipidemia. Women with PCOS have higher LDL and non-HDL cholesterol regardless of body size, placing them at risk for cardiovascular disease.^{8,9}

Etiology and Diagnosis

PCOS remains a syndrome, as no single criterion is diagnostic. It is mainly a disorder of excessive androgen production, use, or metabolism with oligo- or anovulation. In 2003 a consensus workshop sponsored by the European Society of Human Reproduction and Embryology (ESHRE) and the American Society of Reproductive Medicine (ASRM) in Rotterdam, Netherlands, agreed upon a new definition for diagnosing PCOS. In order to diagnose PCOS, two out of three criteria must be present¹⁰:

1. oligoovulation and/or anovulation
2. clinical or biochemical signs of excess androgen activity
3. polycystic ovaries on ultrasound- (≥ 12 follicles 2–9 mm or vol > 10 ml)

It is important to exclude other etiologies with polycystic-appearing ovaries, such as hypothyroidism, hypothalamic amenorrhea, Cushing's syndrome, congenital adrenal hyperplasia, and ovarian/adrenal tumors.¹¹ In PCOS, the mechanism behind the excessive androgen production and ovulatory dysfunction has been difficult to pinpoint, and the etiology of PCOS is most likely multifactorial. Understanding

the etiology is key to understanding the treatment. There are three main concepts in the development of PCOS.

First is the role of luteinizing hormone (LH). LH is normally secreted in a pulsatile manner. However, women with PCOS have an increase in both the LH frequency and amplitude, resulting in increased 24-hour secretion. Increased LH leads to an increase in androgen production by the theca cells within the ovary.^{12,13}

Second is the alteration in insulin secretion and action, which results in hyperinsulinemia and insulin resistance. Insulin resistance is a characteristic metabolic disturbance associated with PCOS. Both obese and nonobese women with PCOS have a higher incidence of insulin resistance and hyperinsulinemia than age-matched controls.¹² There is a strong correlation between insulin resistance and hyperandrogenism.⁸ Insulin acts synergistically with LH to enhance androgen production in the ovarian theca cells. Insulin also decreases hepatic synthesis and secretion of sex hormone-binding globulin (SHBG), thus increasing the amount of free testosterone.^{12,13}

A third component of PCOS is a defect in androgen synthesis that results in increased ovarian androgen production. This is due in part to an increase in ovarian enzymatic activity involved in the synthesis of testosterone precursors, leading to the increased testosterone seen in PCOS.^{12,13}

When discussing the etiology of PCOS, environmental triggers should not be overlooked, as recent research has shown that hormone-disrupting chemicals are linked to PCOS. Phthalates, bisphenol-A, cadmium, and mercury have all been correlated with PCOS. The mechanism includes altering hormones to cause anovulation, development of insulin resistance, and hyperandrogenemia. This evidence is outlined in the book *8 Weeks to Women's Wellness. The Detoxification Plan for Breast Cancer, Endometriosis, Infertility and Other Women's Health Conditions* (Smart Publications; April 2011).

Naturopathic Treatment Approach

A therapeutic approach to managing PCOS includes addressing the underlying disorder, managing the presenting symptoms, and reducing the risk of cardiovascular disease.

Treatment goals are aimed at:

1. restoring menstrual regularity
2. reduce androgens and treat symptoms of excess
3. restore fertility if desired
4. health maintenance; weight reduction if obese and cardiovascular protection
5. patient education and support

Methods to achieve these goals include lowering estrogens and androgens by stimulating SHBG and inhibiting 5-alpha reductase to inhibit conversion of testosterone to DHT, and modifying insulin resistance and lowering oversecretion of insulin.

Natural treatment modalities include diet and lifestyle modification, exercise, botanical medicine, vitamins and

minerals, and other nutrients.

Weight reduction and exercise have been shown to help obese women with PCOS. A study done with 18 infertile obese women with PCOS and menstrual irregularities involved a 6-month weight-loss diet and exercise plan. The obese women with PCOS were compared with age-matched controls. The women showed an 11% reduction in central fat, a 71% improvement in insulin sensitivity index, a 33% fall in fasting insulin levels, and a 39% reduction in LH levels; and nine of the women began to ovulate.¹⁴ By using a lifestyle program that promotes realistic weight-loss and exercise goals, not rapid weight loss, participants were able to sustain an improvement over a 6-month period in insulin sensitivity and ovulation.

Botanicals traditionally used to treat PCOS include:

1. *Serenoa repens* (saw palmetto)
2. *Urtica dioica* (nettle)
3. *Camellia sinensis* (green tea)
4. *Gymnema sylvestre*
5. *Trigonella foenum-graecum* (fenugreek)
6. *Glycyrrhiza glabra* (licorice root)
7. *Mentha spicata* (spearmint)

Recent research has focused on the mechanism of each plant in addressing the pathophysiology of PCOS. Saw palmetto inhibits 5-alpha reductase, therefore inhibiting conversion of testosterone to DHT. It reduces androgen effects at the hair follicle and pilosebaceous unit, decreasing hirsutism and acne.¹⁵ The study dose was 200 mg twice a day. Nettle root, not leaf, 300 mg twice a day, binds to and increases SHBG, thus decreasing the amount of free testosterone.^{16,17} Green tea also increases SHBG, thus decreasing testosterone, and it promotes weight loss.¹⁸ A recent study took 34 obese Chinese women with PCOS and randomized them into either treatment with green tea capsules or placebo for 3 months. The body weight of the green-tea group decreased by 2.4% after treatment, whereas the body weight, body mass index (BMI), and body fat content of the control group were significantly higher after 3 months. The dose used was 270 mg of ECGC from green tea.¹⁹ Gymnema and fenugreek are typically used in patients with diabetes and hyperlipidemia, which is often present in women with PCOS. Gymnema reduces blood glucose, total cholesterol, triglycerides, and LDL and can increase HDL.²⁰ Fenugreek lowers fasting glucose levels and postprandial glucose, and improves glucose tolerance.²¹

Licorice can also decrease testosterone synthesis in women.²² Nine healthy women, aged 22 to 26 years, received 3.5 g of licorice containing 7.6% glycyrrhizic acid (0.25 grams total glycyrrhizic acid per day) q.d. for 2 months. Mean total serum testosterone significantly decreased after one and two months of treatment with no change in blood pressure, often a reported side effect of licorice.²³ Lastly, spearmint tea is a beneficial treatment for women with PCOS. Forty-two women with PCOS and hirsutism drank spearmint tea b.i.d. for 30 days, compared

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with a placebo tea. The women in the spearmint group had lower testosterone levels, higher FSH and LH, and subjective improvement in hirsutism.²⁴

Other nutrients to consider are D-chiro-inositol and maitake mushroom. D-chiro-inositol (DCI) was given to 44 obese women with PCOS to determine its effects on ovulation, hormones, and insulin. Twenty-two women were given 1200 mg once a day for 6 to 8 weeks and compared with 22 controls. The women taking DCI had decreased insulin and testosterone, and 18 out of 22 ovulated.²⁵ Maitake mushroom extract was given to women with PCOS and compared with women with PCOS taking clomiphene to induce ovulation. After 3 menstrual cycles, the maitake group had an ovulation rate of 76.9% and the clomiphene group had an ovulation rate of 93.5%.²⁶ The proposed mechanism is that maitake mushroom enhanced insulin sensitivity.

Finally, it is important to evaluate and treat any underlying environmental toxins that may be contributing to PCOS. Educate on avoiding chemicals found in food, air, water, cosmetics, plastics, and household products. Remove any stored chemicals from the body through proper detoxification methods.

Summary

Polycystic ovarian syndrome is a complex condition presenting with menstrual irregularities; oligo- or anovulation, often affecting fertility; signs of hyperandrogenism such as acne and hirsutism; and insulin resistance, increasing the risk of cardiovascular disease. Many natural treatment options are available and aimed at addressing the underlying pathophysiology behind PCOS. PCOS can be successfully managed with lifestyle modifications, botanical medicine, and other nutrients. Proper management can reverse all symptoms, restore fertility, and decrease risk of future cardiovascular disease.

Notes

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