## PCOS: HOW CAN DIET & LIFESTYLE CHANGES HELP?

Polycystic ovarian syndrome (PCOS) is a hormonal disorder that affects 5-10% of women of reproductive age. In addition, one of every ten girls as young as age eleven are affected by this syndrome. This can be an estimated total of five million women in the U.S. Sadly, this does not even include the young women/girls who have not been properly diagnosed. PCOS can lead to irregular menstrual cycles, pelvic pain, high androgens (testosterone), acne and hirsutism, infertility, weight gain and CVD.

While there is no exact cause for PCOS, there are some theories about how a young woman could develop this syndrome. One possible theory is that women with high insulin levels can be more likely to develop PCOS. High insulin levels eventually result in insulin resistance. Cells that get too much insulin become numb to it. This raises insulin above the normal range. Add in some stress and excess cortisol and you really have a bonfire! High insulin then stimulates the ovaries and adrenals to secrete excess androgens (testosterone, DHEA-S) and produce cysts in some cases. This then triggers increased visceral fat (and insulin), increased adiponectin and increased inflammation. Estrogen levels rise and cells become even more resistant to insulin. It's like a vicious cycle: higher insulin => high estrogen => insulin resistance => weight gain => higher estrogen. Another theory regarding development of PCOS is genetics. Having another female relative with PCOS is thought to predispose some young women to developing the syndrome.

As previously mentioned, PCOS can result in irregular menstrual cycles, pelvic pain, high androgens, polycystic ovaries, acne and hirsutism. Hirsutism (60-80% of women) is growing hair in places you don't want to, like on your face. Some women with PCOS can also suffer hair loss on their head. Irregular menstrual cycles are usually problems with ovulation. This can show up as having a period less often. Polycystic ovaries are usually seen on pelvic ultrasound. Classically, this looks like a "string of pearls".

Diagnosis of PCOS is complicated. Checking serum levels of fasting insulin, testosterone, free testosterone, DHEA-S and SHBG is helpful but not definitive. Looking for signs of acne or hirsutism, obesity (high BMI), ovulation problems or ovarian cysts on ultrasound are also helpful. It's important to understand that not all women have all of the signs and symptoms of PCOS. As a health care practitioner, it's important to get a thorough history and listen to the patient, as she can really fill in all of the missing blanks in this diagnosis. Understanding, diagnosing and then treating PCOS in a timely manner is important as this is a syndrome that predisposes women to developing diabetes mellitus 2 by the time they are 40 years old. They may also develop high triglycerides and low levels of HDL (good cholesterol). There is also research that associates PCOS with a higher risk of CVD (related to high androgens) and breast cancer. The link here is high insulin, high androgens and metabolic syndrome.

Taking a Functional Medicine approach to PCOS definitely makes sense, especially when diagnosed early. In my office we start with diet. We may consider a low carbohydrate diet like the ketogenic diet or a Mediterranean diet. Also using some intermittent fasting to reset insulin levels works very well. Adding some daily exercise helps with improved insulin sensitivity, visceral fat and overall weight loss. Definitely addressing low vitamin D levels will help to improve hormonal, metabolic, inflammatory and possibly cardiovascular outcomes. Up to 85% of women with PCOS are actually deficient in vitamin D. We may also use things like insulin sensitizers which could include things like berberine, inositol, chromium picolinate, alpha-lipoic acid and omega 3 fatty acids. If high androgen levels are present, we may use aromatase inhibitors (stops conversion of hormones to testosterone or estrogen) like zinc, grape seed extract and cruciferous vegetables. Of course, addressing high cortisol with yoga, meditation and some natural adrenal support is also helpful. So, if you suspect you may have PCOS, don't suffer and get some help...naturally.

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Tricia Talerico, D.C., M.S., Nutr. Nutrition and Weight Loss Center of Ocean Dow Plaza • 1819 Highway 35 North Oakhurst, NJ 07755

732-609-3366

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