

## **PCOS: Another Face of Metabolic Syndrome?**

Lisa, a 29 year old clinical nurse, came to see me a year ago because she had been trying to get pregnant for twelve months. She was tearful and expressed frustration with the process, felt anxiety over her inability to lose weight and the continued “teenage acne” that she just didn’t seem to be growing out of. She had been treated with oral contraceptives for a few years for the acne and irregular menstrual cycles during her teens and early 20’s. She stopped a few years ago as she was ready to consider starting a family. She was feeling depressed and overwhelmed and had not been sleeping well. A twelve hour shift plus commute time meant she ate fast food, snacks, and soda, had gained weight but had little time for exercise. She and her husband of 3 years were happy, but she wondered if he really wanted to have kids because he wasn’t as interested in the process as she was.

Lisa had very specific symptoms for her, but this story is one that I see so often in women in my practice. I recognized we were dealing with some primary hormonal imbalances that may have been present for more than 10 years now. In addition, the symptoms had started to develop into some depression, anxiety, and sleep issues. Her busy, sedentary lifestyle, plus a poor diet was adding fuel to the fire.

I conducted saliva testing for hormones and ran blood work to evaluate metabolic dysfunction and nutritional deficiencies. I was fairly certain we were dealing with inadequate progesterone, possibly anovulation, and likely insulin resistance which is an early indicator of an increased risk for diabetes and heart disease, even some cancers. She likely had a diagnosis of PCOS. Her testing came back consistent with my initial thoughts: low progesterone, suboptimal cortisol levels, low Vitamin D, a high range fasting blood sugar, and an elevated insulin level.

We began immediately with topical progesterone cream, 25mg applied to the inner arms at night during days 14-28 of her cycle. A supplement with chromium, cinnamon, alpha lipoic acid, green tea extract, and gymnema for the insulin resistance and 10,000 IU Vitamin D3 with K2 to support the Vitamin D deficiency. In addition, we began coaching on nutrition, lifestyle, mindset, and sleep support.


Fairly quickly, we saw improvement in her overall sense of well-being. She was so pleased to have a team that understood her frustrations and that had experience with PCOS, and to have an action plan rather than a band aid approach that she had previously been prescribed. She continued with the supplementation and lifestyle changes, we made small adjustments along the way as we saw improvement in her symptoms as well as a positive response in follow-up blood work.

I recently received an email from her with a beautiful, black and white ultrasound picture of her baby on the way. We are so excited for her and so grateful to be part of this amazing journey with her!

The connection between androgen hormones and blood sugar regulation is one that is often missed by family care practitioners, however ELEVATIONS IN WOMEN can provide an especially important early indicator of dysfunction that may lead to more overt disease processes including PCOS, metabolic syndrome, or frank diabetes. PCOS is the most common female endocrinopathy in developed world. In the US, 25-30% of reproductive age women have polycystic ovaries but only 7% have frank symptoms of the syndrome.<sup>1</sup> As many as 50% of these women are not yet diagnosed. Insulin resistance, impaired glucose tolerance, Type 2 diabetes mellitus, obesity and dyslipidemia are more common in women with PCOS than in age-comparable women without PCOS. PCOS is the most common cause of anovulatory infertility.

**Symptom Picture**


<p><b>Lab Findings</b></p> <ul style="list-style-type: none"> <li>• Low Progesterone</li> <li>• Low Pg/E2 Ratio</li> <li>• Elevated/Upper Range DHEA</li> <li>• Elevated/Upper Range Testosterone</li> <li>• Elevated Insulin/IR</li> </ul>	<p><b>Patient Presentation</b></p> <ul style="list-style-type: none"> <li>• Irregular/Infrequent Menses</li> <li>• Acne</li> <li>• Hirsutism</li> <li>• Insulin Resistance</li> <li>• Overweight</li> <li>• Infertility</li> <li>• Often Cortisol Dysregulation</li> </ul>
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**PCOS and Obesity:**

The prevalence of overweight and obesity in women with PCOS has been reported to be as high as 80% in the United States! Obesity is considered the primary etiology of:

- 88–97% of cases of type 2 diabetes
- 57–70% of cases of coronary heart disease
- 70% of gallstone attacks
- 35% of cases of hypertension
- 11% of breast cancers
- 10% of colon cancers

Visceral fat or abdominal fat, also known as organ fat or intra-abdominal fat, is located inside the abdominal cavity, packed in between organs (stomach, liver, intestines, kidneys, etc.). Visceral fat is different from subcutaneous fat found underneath the skin, and intramuscular fat interspersed in skeletal muscles. Fat in the lower body, as in thighs and buttocks, is subcutaneous, whereas fat in the abdomen is mostly visceral. Visceral fat is composed of several adipose deposits including mesenteric, epididymal white adipose tissue (EWAT), and perirenal depots. An excess of visceral fat is known as central obesity, or "belly fat", in which the abdomen protrudes excessively. There is a strong correlation between central obesity and cardiovascular disease, diabetes, insulin resistance, inflammatory diseases, and other obesity-related diseases.

#### Integrative Treatment Approaches to Consider:

- Lifestyle – reduce inflammation & regulate blood sugar
  - Dietary modifications
    - 30-40% protein with high fiber and avoidance of starchy, sugary carbs  
Abundant greens, fresh veggies
    - Encourage nuts, legumes, lentils
    - Avoid refined processed foods, sugars and processed carbs like pasta and breads  
Avoid artificial sweeteners (except stevia) and sugars<sup>3,4</sup>
  - Exercise: a study established that consistent exercise leads to a 58% reduction in progression to diabetes vs 31% in a metformin group<sup>5</sup>
  - Nutraceuticals
  - Address blood sugar/IR, inflammation
    - Omega 3 (EPA, DHA)
    - Alpha Lipoic Acid
    - Curcumin
    - Chromium
    - Cinnamon
    - Gymnema
    - Vanadium
    - Milk Thistle
  - Ensure adequate Vitamin D
    - Vitamin D deficiency is common in women with PCOS 65-87% of women with PCOS are deficient in vitamin D (<20 ng/mL)<sup>6</sup>
    - Higher vitamin D status has been correlated with 60% improvement in insulin sensitivity.<sup>7</sup>
    - Clinical trial using 1332 IU/day vitamin D for 30 days in 10 women with type II diabetes improved 21%. Metformin was shown to give a 13% improvement in insulin sensitivity.<sup>7</sup>
    - Evaluate use of Oral Contraceptive Pills which deplete folic acid, vitamins B2, B6, B12, C and E, Zinc Magnesium and Selenium.<sup>8</sup>

- Support ovulation
- BHRT – progesterone 30 mg per day on days 15-28 of the cycle.
- Botanical Medicine - licorice, cinnamon, spearmint, vitex (or chaste berry).
- Exercise – vigorous exercise 30-60 minutes per day is associated with reduced risk of anovulatory fertility. <sup>9</sup>

#### References

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