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Polycystic Ovarian Syndrome (PCOS, Stein–Leventhal Syndrome)

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What is polycystic ovarian syndrome?

Polycystic ovarian syndrome (PCOS), also known by the name Stein–Leventhal syndrome, is a hormonal problem that causes women to have a variety of symptoms.

What are the symptoms of polycystic ovarian syndrome (PCOS)?

The symptoms of PCOS include:

1. Irregular or no menstrual periods
2. Acne
3. Obesity, and
4. Excess hair growth

Other signs and symptoms of PCOS include:

- weight gain,
- acne,
- oily skin,
- dandruff,

- infertility,
- skin discolorations,
- high cholesterol levels,
- elevated blood pressure, and
- abnormal hair growth and distribution.

Any of the above symptoms and signs may be absent in PCOS, with the exception of irregular or no menstrual periods. All women with PCOS will have irregular or no menstrual periods. Women who have PCOS do not regularly ovulate; that is, they do not release an egg every month. This is why they do not have regular periods.

What causes polycystic ovarian syndrome (PCOS)?

No one is quite sure what causes PCOS. Although women with PCOS often have a mother or sister with the condition, there is not enough scientific evidence to prove that the condition may be inherited. The ovaries of women with PCOS frequently contain a number of small cysts, hence the name poly (many) cystic ovarian syndrome. A similar number of cysts may occur in women without PCOS. Therefore, the cysts themselves do not seem to be the cause of the problem. A malfunction of the body's blood sugar control system (insulin system) is frequent in women with PCOS, and researchers believe that these abnormalities may be related to the development of PCOS. It is known that the ovaries of women with PCOS produce excess amounts of male hormone known as androgen. This excessive production of male hormones may be a result of the abnormalities in insulin production.

How is polycystic ovarian syndrome diagnosed?

The diagnosis of PCOS is generally made on the basis of clinical signs and symptoms as discussed above. The doctor will want to exclude other illnesses that have similar features, such as low thyroid hormone blood levels (hypothyroidism) or elevated levels of a milk–producing hormone (prolactin). Also, tumors of the ovary or adrenal glands can produce elevated male hormone (androgen) blood levels that cause acne or excess hair growth, mimicking symptoms of PCOS.

Other laboratory tests can be helpful in making the diagnosis of PCOS. Serum levels of male hormones (DHEA and testosterone) may be elevated. However, levels of testosterone that are highly elevated are not unusual with PCOS and call for additional evaluation. Additionally, levels of a hormone released by the brain (LH) are elevated.

Cysts are fluid–filled sacs. The cysts in the ovaries can be identified with imaging technology. (However, as noted above, women without PCOS can have many cysts as well.) Ultrasound, which passes sound waves through the body to create a picture of the kidneys, is used most often. Ultrasound imaging employs no injected dyes or radiation and is safe for all patients including pregnant women. It

can also detect cysts in the kidneys of a fetus. Because women without PCOS can have ovarian cysts, and because ovarian cysts are not part of the definition of PCOS, ultrasound is not routinely ordered to diagnose PCOS. The diagnosis is usually a clinical one based on the patient's history, physical examination, and laboratory testing.

More powerful and expensive imaging methods such as computed tomography (CT scan) and magnetic resonance imaging (MRI) also can detect cysts, but they are generally reserved for situations where other conditions, such as ovarian or adrenal gland tumors are suspected. CT scans require x–rays and sometimes injected dyes, which can be associated with some degree of complications in certain patients.

What conditions can be associated with polycystic ovarian syndrome?

Women with PCOS are at a higher risk for a number of illnesses, including high blood pressure, diabetes, heart disease, and cancer of the uterus (endometrial cancer). Much of this risk can be reversed by exercise and weight loss. Additionally, it is important for women with PCOS to have regular periods. If a woman does not have regular periods, her risk of cancer of the uterus (endometrial cancer) is increased. Medication is generally prescribed to induce regular periods. Obesity
is a complication of PCOS. Reducing the medical risks from PCOS–associated obesity requires hard work on the part of the woman with PCOS and is often frustrating. For more information about obesity and management, please read the Obesity article.

What treatments are available for polycystic ovarian syndrome?

Treatment of PCOS depends partially on the woman's stage of life. For younger women who desire birth control, the birth control pill, especially those with low "androgenic" (male hormone–like) side effects can cause regular periods and prevent the risk of uterine cancer. For women who do not require birth control, treatments that cause a woman to have a period four times a year is all that is required.

For acne or excess hair growth, a water pill (diuretic) called spironolactone may be prescribed to help reverse these problems. The use of spironolactone requires occasional monitoring of blood tests because of its potential effect on the blood potassium levels and kidney function. Propecia, a medicine taken by men for hair loss, is another medication that blocks the effect of male hormones on hair growth. Both of these medications can affect the development of a male fetus and should not be used if the woman desires to become pregnant.

For women who desire pregnancy, a medication called clomiphene (Clomid) can be used to induce ovulation (cause egg production). In addition, weight loss can normalize menstrual cycles and often increases the possibility of pregnancy in women with PCOS. Other, more aggressive, treatments for infertility (including injection of gonadotropin hormones and assisted reproductive technologies) may also be required in women who desire pregnancy and do not become pregnant on Clomid therapy. Obesity that occurs with PCOS needs to be treated because it can cause numerous additional medical problems. Consultation with a dietician

on a frequent basis is helpful until just the right individualized program is established for each woman.

Metformin
(Glucophage) is a medication used to treat type 2 diabetes. This drug affects the action of insulin and is useful in reducing the symptoms of PCOS.

Finally, a surgical procedure known as ovarian drilling can help induce ovulation in some women who have not responded to other treatments for PCOS. In this procedure a small portion of ovarian tissue is destroyed by an electric current delivered through a needle inserted into the ovary.

Polycystic Ovarian Syndrome At A Glance

- Polycystic ovarian syndrome (PCOS) is an illness characterized by irregular or no periods, acne, obesity, and excess hair growth.
- Women with PCOS are at a higher risk for obesity, diabetes, high blood pressure, and heart disease.
- With proper treatment, risks can be minimized. Ideal treatment is directed to each of the manifestations of PCOS.

References: American Association of Clinical Endocrinologists Polycystic Ovary Syndrome Writing Committee; American Association of Clinical Endocrinologists Position Statement on Metabolic and Cardiovascular Consequences of Polycystic Ovary Syndrome. *Endocr Pract.* 2005 Mar–Apr;11(2):126–34. No abstract available. Rotterdam ESHRE/ASRM–Sponsored PCOS Consensus Workshop Group. Revised 2003 consensus on diagnostic criteria and long–term health risks related to polycystic ovary syndrome. *Fertil Steril*. 2004 Jan;81(1):19–25. Schroeder BM; American College of Obstetricians and Gynecologists. ACOG releases guidelines on diagnosis and management of polycystic ovary syndrome. *Am Fam Physician*. 2003 Apr 1;67(7):1619–20, 1622. No abstract available.

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