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The Role of Genetics in Polycystic Ovary Syndrome

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Abstract

Polycystic ovary syndrome (PCOS), also known as polycystic ovarian syndrome, is a common health problem caused by an imbalance of reproductive hormones. The hormonal imbalance creates problems in the ovaries. The ovaries make the egg that is released each month as part of a healthy menstrual cycle. With PCOS, the egg may not develop as it should or it may not be released during ovulation as it should be.

Key Words: Polycystic ovary syndrome (PCOS); sex hormones; hyperandrogenism; infertility

Clinical Signs and Symptoms of Polycystic Ovary Syndrome

Polycystic ovary syndrome is a disorder that affects women during their childbearing years and alters the levels of many hormones, resulting in problems in many body systems.

Most women with polycystic ovary syndrome overproduce male sex hormones (androgens), a condition called hyperandrogenism. Too much of these hormones usually leads to overgrowth of the body hair (hirsutism), acne and baldness of the male pattern [1].

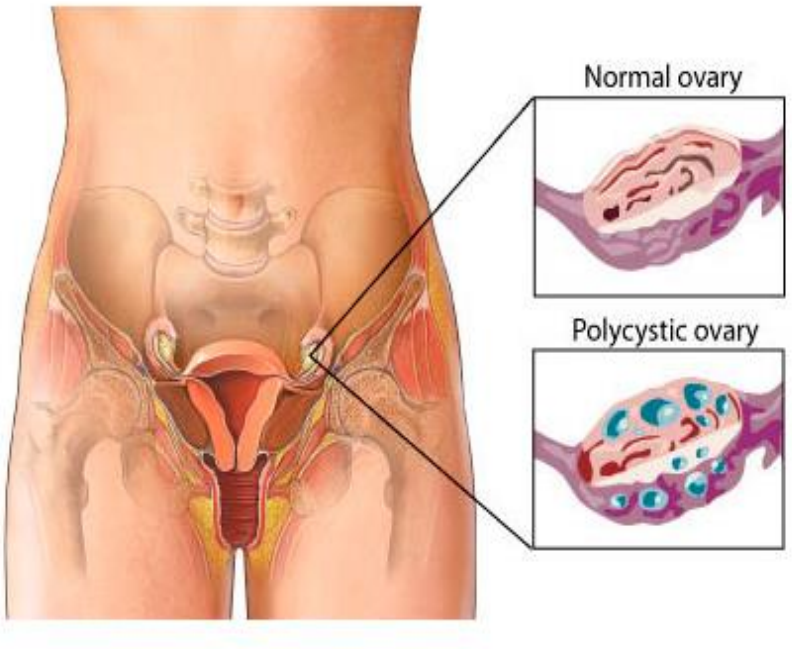

Figure 1: Schematic of a normal ovary versus an ovary with polycystic ovary syndrome [1].

Hyperandrogenism and abnormal levels of other sex hormones prevent the normal secretion of egg cells from the ovaries (ovulation) and regular menstrual periods, leading to difficulty in giving birth (infertility) or complete inability to conceive

(infertility) Becomes. For those who reach the stage of pregnancy, the risk of complications and abortion is higher. Due to irregular and less than normal menstruation and hormonal abnormalities, women with an increased risk of developing uterine cancer (endometrial cancer) [1,2].

In polycystic ovary syndrome, multiple cysts are seen on each ovary with medical imaging. These cysts are small, immature ovarian follicles. Typically, ovarian follicles contain egg cells that are released during ovulation. In polycystic ovary syndrome, abnormal hormone levels prevent the follicles from growing and maturing to release egg cells. Instead, these immature follicles accumulate in the ovaries. Affected women can have 12 or more of these follicles. It should be noted that the number of these follicles usually decreases with age [1,2].

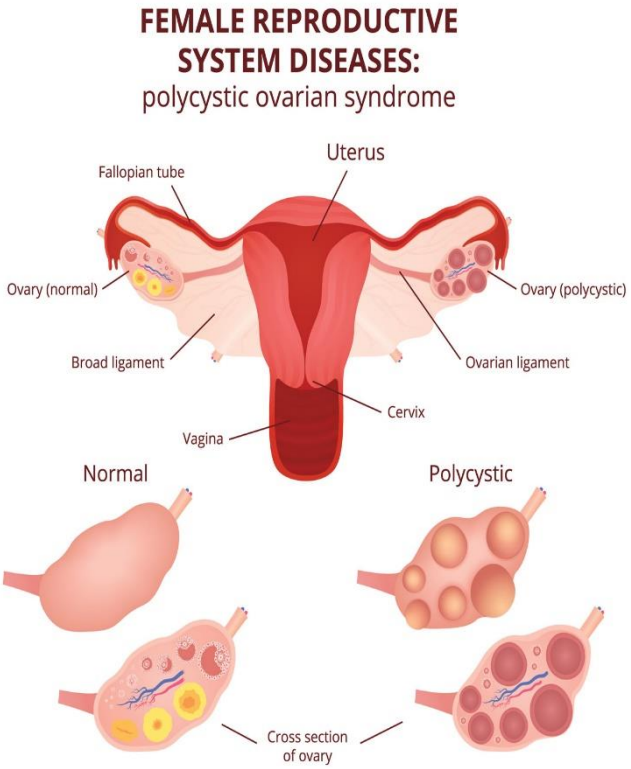

Figure 2: Schematic of a normal female reproductive system (left) versus a female reproductive system with polycystic ovary syndrome [1].

About half of women with polycystic ovary syndrome are overweight or obese and at risk for fatty liver. In addition, many women with polycystic ovary syndrome have high levels of insulin, a hormone that helps control blood sugar. By age 40, about 10 percent of overweight women with polycystic ovary syndrome will have abnormally high blood sugar (type 2 diabetes) and up to 35 percent will have pre-diabetes (higher blood sugar). Than normal who does not have diabetes). Obesity and increased insulin levels (hyperinsulinemia) increase androgen production in polycystic ovary syndrome [1,3].

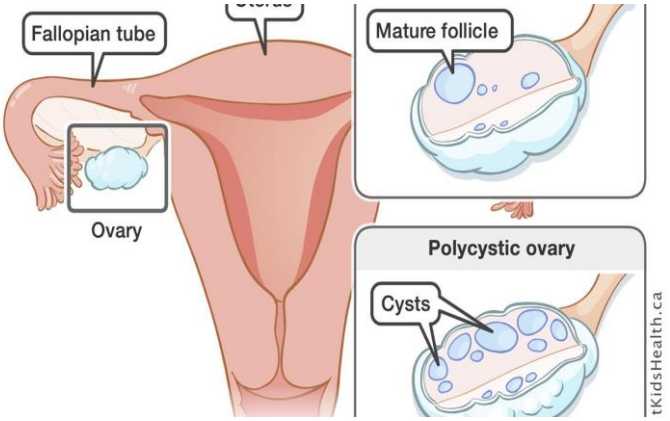

Figure 3: Schematic of a normal ovary and a polycystic ovary [1].

Women with polycystic ovary syndrome are also at risk for metabolic syndrome, which is a group of conditions that include high blood pressure, high belly fat, high levels of unhealthy fats, and low levels of healthy fats in the blood. Is. Due to high blood sugar, about 20% of adults with this syndrome have trouble breathing during sleep (sleep apnea). Women with polycystic ovary syndrome are more likely to have mood disorders such as depression than the general population [1,3].

Etiology of Polycystic Ovary Syndrome

The causes of polycystic ovary syndrome are complex. This condition is caused by a combination of genetic, health and lifestyle factors, some of which have not been identified. Common changes (polymorphisms) in several genes are associated with the risk of polycystic ovary syndrome. Because they are common, these changes can occur in people with polycystic ovary syndrome and in people who do not. In fact, it is a combination of these changes that helps determine a woman's likelihood of developing this syndrome [1,4].

Genes involved in many body processes are thought to be involved in the development of polycystic ovary syndrome. The main causes of this syndrome are likely to be a variety of genetic changes that increase the production of androgens and other sex hormones such as luteinizing hormone and antimullerian hormone, both of which play a key role in ovulation. Other types of genetic changes that may be involved in reducing follicle-stimulating hormone are thought to be involved in poor follicular growth in women with polycystic ovary syndrome [1,4].

Other genes associated with polycystic ovary syndrome are involved in energy production, the immune system's response to injury (inflammation), insulin production and regulation, and fat production pathways. Genetic changes are likely to work alongside health and lifestyle factors to affect a woman's overall risk of developing polycystic ovary syndrome. Risk factors include diabetes, obesity, and a sedentary lifestyle [1,4].

Polycystic ovary syndrome does not have a specific inherited pattern, although people with the disease may have a close family member with the disease. It is estimated that 20 to 40 percent of women with polycystic ovary syndrome also have an infected mother or sister. This increase in family risk may be due to common genetic factors, but lifestyle influences shared by family members may also play a role in causing the syndrome [1,4].

Prevalence of Polycystic Ovary Syndrome

Polycystic ovary syndrome is the most common cause of infertility due to lack of ovulation. The prevalence of polycystic ovary syndrome is often reported in 6 to 10% of women worldwide. However, some studies show a wider range from 4% to 21% of women, depending on the criteria used for diagnosis [1,5].

Diagnosis of Polycystic Ovary Syndrome

Polycystic ovary syndrome is diagnosed based on the clinical findings of some patients and some pathological tests. The most accurate way to diagnose this syndrome is to check the levels of androgen and LH and FSH in women [1,5].

Treatment Options for Polycystic Ovary Syndrome

The treatment strategy and management of polycystic ovary syndrome is symptomatic and supportive. Treatment may be with the efforts and coordination of a team of specialists, including gynecologists, endocrinologists, hormone specialists, dermatologists, gastroenterologists, and captive health care professionals. No reliable route has been reported for infertility and infertility in women with polycystic ovary syndrome. Genetic counseling is also very important for all parents who want a healthy child [1,5].

Discussion

Most women with polycystic ovary syndrome overproduce male sex hormones (androgens), a condition called hyperandrogenism. Women with polycystic ovary syndrome are also at risk for metabolic syndrome, which is a group of conditions that include high blood pressure, high belly fat, high levels of unhealthy fats, and low levels of healthy fats in the blood. There is no cure for PCOS, but you can manage the symptoms of PCOS. You and your doctor will work on a treatment plan based on your symptoms, your plans for having children, and your risk of long-term health problems such as diabetes and heart disease. Many women will need a combination of treatments, including: Steps you can take at home to help relieve your symptoms and Medicines [1,5].

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