

# Polycystic Ovary Syndrome

## Definition of Polycystic Ovary Syndrome

Polycystic ovary syndrome (PCOS) is a syndrome presenting with two or more of the following: polycystic ovaries, oligo-ovulation or anovulation, or elevated androgen levels or hyperandrogenism clinical signs.

## Pathophysiology

Anovulation occurs through a complex perpetuating cycle that causes follicle development dysfunction. Follicular apoptosis is suppressed due to the increased insulin, which allows the follicles to survive. The increase in insulin also increases androgens and free testosterone is elevated resulting in altered follicle growth. The increase in gonadotropins causes persistent LH elevation which causes an increase in androgen release. This leads to their conversion into estrogen in peripheral tissue. The increased amounts of testosterone cause sex hormone-binding globulin to be reduced, causing an increase in free estradiol. Follicle stimulating hormone is not completely depressed so follicles continue to develop, but not completely mature due to the increased insulin. The follicles fail and anovulation is present while the ovaries are enlarged with multiple cysts present.

## Genetics

Genetics is suspected as the cause of PCOS based on the involvement of genes in androgen and steroid biosynthesis and insulin receptors in the ovaries. A genetic ovarian defect is also suspected, which causes the ovaries to be more susceptible to the effects of the androgens.

## Epidemiology

PCOS is the leading cause of infertility in the United States and in one of the most common endocrine disorders in women. The prevalence of the syndrome is 4-12% or 3.2-5.4 million women affected.

## Description

Polycystic ovaries are not always present with the syndrome. However, polycystic ovaries, hyperandrogenism, insulin resistance, and hyperinsulinemia are often clinical features of PCOS. Initial symptoms often appear shortly after puberty or a period of normal menstruation followed by appearance of the symptoms.

## Signs and Symptoms

### Initial presenting symptoms

- Obesity
- Asymptomatic
- Hirsutism
- Menstrual disturbance
- Oligomenorrhea
- Regular menstruation
- Amenorrhea
- Hyperandrogenism
- Infertility

### Potential later symptoms

- Dyslipidemia (increased LDL and triglycerides, decreased HDL)
- Type II diabetes
- Hypertension
- Cardiovascular disease
- Endometrial hyperplasia
- Carcinoma

### Obstetric Considerations

- Gestational diabetes
- Pregnancy induced hypertension
- Preterm birth
- Perinatal mortality

## Diagnosis

Diagnosis is based on anovulation and hyperandrogenism. Other indicators include decreased SHBG, IGF-1 receptors on the theca cells and estrogen receptors in the ovaries and hypothalamic-pituitary axis. Increases may be present in LH, prolactin, DHEA, insulin, and leptin.

- Glucose tolerance test
- Ultrasound

## Treatment

- Restore menstruation and fertility
- Remove effects of excess androgen
- Reduce metabolic and endocrine effects
- Oral contraceptives
- Metformin
- Progesterone
- Clomid
- Weight loss
- Exercise
- Weight loss surgery
- Femara
- Ovarian drilling
- HCG
- Various fertility treatments in addition to the above mentioned medication

## Links

American Diabetes Association

<http://www.diabetes.org>

## Current Articles

Tomlinson, J., Letherby, G., Pinkney, J., Millward, A., & Stenhouse, E. (2013). Raising awareness of polycystic ovary syndrome. *Nursing Standard*,27(40), 35-39.

## References

McCance, K., Huether, S., Brashers, V., and Rote, N. (2010). *Pathophysiology: The biological Basis for disease in adults and children* (6th ed.). St. Louis, MO: Elsevier Saunders.