Polycystic Ovarian Syndrome: Most Common Hormonal Disorder

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Polycystic ovarian syndrome (PCOS) is the most common hormonal disorder in females of reproductive age. It is characterized by two or more of the following: irregular menstrual periods, hyperandrogenism, and polycystic ovaries. This activity outlines the evaluation and treatment of polycystic ovarian syndrome and reviews the role of the interprofessional team in managing patients with this condition.

**Objectives:**
- Describe the epidemiology of polycystic ovarian syndrome.
- Review the role of functional ovarian hyperandrogenism (FOH) in the pathophysiology of polycystic ovarian syndrome.
- Summarize the use of the Rotterdam criteria in the evaluation of polycystic ovarian syndrome.
- Outline the importance of collaboration and communication among the interprofessional team to emphasize lifestyle changes and close follow-up to improve patient outcomes affected by polycystic ovarian syndrome.

**Introduction**

Polycystic ovarian syndrome (PCOS) is the most common endocrine pathology in females of reproductive worldwide. Stein and Leventhal initially described it in 1935. The prevalence ranges between 5% and 15% depending on the diagnostic criteria applied. It is widely accepted among specialty society guidelines that the diagnosis of PCOS must be based on the presence of at least two of the following three criteria: chronic anovulation, hyperandrogenism (clinical or biological), and polycystic ovaries. It is a diagnosis of exclusion, and disorders that mimic clinical features of PCOS must be excluded. These include thyroid disease, hyperprolactinemia, and non-classical congenital adrenal hyperplasia. Selected patients may need more extensive workup if clinical features suggest other causes. Despite its high prevalence, PCOS is underdiagnosed and frequently takes more than one visit or different physicians to get identified, and these usually occur in more than a one-year timeframe. It is a very frustrating process for the patient. Delay in diagnosis can lead to the progression of comorbidities making it more difficult to implement lifestyle intervention, which is critical for the improvement of features of PCOS and quality of life.

Multiple morbidities are associated with PCOS, including infertility, metabolic syndrome, obesity, impaired glucose tolerance, type 2 diabetes mellitus (DM-2), cardiovascular risk, depression, obstructive sleep apnea (OSA), endometrial cancer, and nonalcoholic fatty liver disease/nonalcoholic steatohepatitis (NAFLD/NASH). There are different screening recommendations for each of these pathologies, but the clinician must have a low threshold for workup if any manifestation is shown in PCOS patients.

**Etiology**

PCOS is a multifactorial disease. Several susceptible genes have been identified as contributors to the pathophysiology of the disease. These genes are involved in various levels of steroidogenesis and androgenic pathways. Twin studies have estimated about 70% heritability. The environment is a fundamental component in the expression of these genes and the development and progression of the disease. Two popular hypotheses postulate that individuals with a genetic predisposition exposed to certain environmental factors lead to the expression of PCOS features. The most common environmental factors include obesity and insulin resistance. Some hypotheses also include fetal androgen exposure.

**Evaluation**

Most society guidelines have accepted that diagnosis of PCOS must meet two out of three criteria: chronic anovulation, clinical or biological hyperandrogenism, and polycystic ovaries morphology in the absence of any other pathology. These clinical features are part of the Rotterdam Criteria. The National Institute of Health criteria also requires clinical or biochemical hyperandrogenism and oligo or anovulation. The American Excess PCOS Society requires hyperandrogenism with one of two of the remaining criteria.

Disorders that mimic the clinical features of PCOS should be excluded. These include thyroid disease, hyperprolactinemia, and non-classical congenital adrenal hyperplasia with 21-hydroxylase deficiency, for which measurement of serum 17-hydroxyprogesterone (17-OHP) should be done, which may require further testing with adrenocorticotropic stimulation test.

**Outcomes**

PCOS affects many organ systems and is best managed by an interprofessional team of healthcare professionals. This team includes clinicians (MDs, DOs, NPs, PAs), specialists, nursing staff, and pharmacists. There is no cure for the disorder, and hence the aim of treatment is to reduce the risk of complications and improve lifestyle. A dietary and physical therapy consults are highly recommended as these are considered first-line treatments.

The women often require a number of medications to manage the hirsutism, anovulation, and menstrual irregularities; hence the pharmacist should ensure that the patient is not developing any adverse reactions to these drugs. All women with PCOS should be encouraged to exercise as this can reduce insulin resistance, body weight, blood lipids, and glucose; more importantly, exercise also enhances self-esteem. Because these women can develop a wide range of complications, close follow-up is highly recommended. Women with POS are at high risk for developing gestational diabetes, preeclampsia, and preterm deliveries. Finally, all women with PCOS should be encouraged to join a support group to help reduce the stress and boost their confidence.