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BREAKING THE CYCLE: ENHANCING MEDICATION ADHERENCE IN PCOS AND PCOD MANAGEMENT

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Abstract
Polycystic ovary syndrome (PCOS) and polycystic ovarian disease (PCOD) is one of the prevalent endocrine disorders affecting women of reproductive age, with an estimated prevalence of 5-10%. PCOD is one of the most prevalent metabolic and reproductive disease. This is a medical condition where women's ovaries generate a significant number of immature or partially mature eggs, which eventually develop in to a ovarian cyst. As a result, the ovarian grows large and secretes more androgens, irregular menstruation periods, abnormal weight gain, hair loss and infertility.

Keywords: Polycystic ovarian syndrome, polycystic ovarian disease, androgen excess, menstrual irregularity, infertility, abnormal weight gain.

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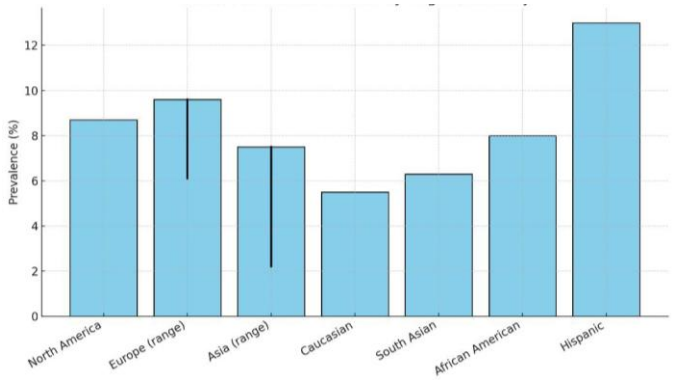
INTRODUCTION

Today, we are going to share about such health issues, which many women suffer from worldwide. That is polycystic ovarian syndrome (PCOS) polycystic ovarian disease or PCOD. This can be a challenge but don't worry we are going to tell you how to manage and potentially improve this condition. PCOD is a hormonal disorder common among women at a reproductive age. Women suffering from PCOD may have infrequent or prolonged menstruation and higher levels of male hormones. It may cause multiple small cysts in the ovary leading to various health issues, including infertility. NOW let`s see how to treat PCOS and PCOD [1-2].

EPIDEMIOLOGY



PREVALENCE

1.PCOS-Affects 8-13% of women of reproductive age world wide
2.PCOD-Prevalance varies, but often considered a subset of PCOS Demographic Variations:

1. Age: Symptoms typically appear during puberty or early reproductive years
2. Ethinicity: Prevalence and presentation may vary across ethnic groups
3. Geographic Location: Differences in prevalence and diagnosis rates across regions [3-4].

ETIOPATHOGENESIS

The etiology of this syndrome is multifactorial. As the exact cause of PCOS remains not fully understood, several key factors contribute to its pathogenesis:

A. Hormonal Imbalance [5]

This syndrome is characterized by hormonal imbalances, with high levels of androgens [male hormones like testosterone] and luteinizing hormone (LH), and lower levels of follicle-stimulating hormone (FSH). This disruption in the hypothalamic-pituitary-ovarian (HPO) axis drives increased production of androgen by the ovaries, which hinders regular follicular development and
ovulation

B. Hyperandrogenism [6]

It is a key factor of [PCOS], marked by high levels of androgens like testosterone and DHEAS. This disorder results in symptoms like excessive hair growth [hirsutism], acne, and male-pattern hair loss. Androgens also interfere with the regular development of follicles and ovulation, causing irregular MC (menstrual cycles) and the formation of small multiple ovarian cysts.

C. Insulin Resistance

Insulin resistance is a frequently seen metabolic problem in women with PCOS, mainly in those who are overweight or obese. This condition causes the body to produce more insulin to make up for decreased insulin sensitivity, leading to hyperinsulinemia [7,8].

Hyperinsulinemia then triggers the production of androgens by the ovaries and plays a role in the development of PCOS

D. Ovarian Dysfunction

Numerous women with PCOS experience issues with their ovaries, such as having more small antral follicles and halted follicular development. These issues lead to irregular periods, ovulation problems, and difficulties getting pregnant for women with
PCOS

E. Environmental Factors

Diet, lifestyle choices, and exposure to certain chemicals can affect the development and progression of PCOS according to studies. In women with PCOS, obesity can worsen insulin resistance and hormonal issues, further complicating the Condition [9].

F. Inflammatory and Immunological Factors

Chronic low-grade inflammation and alterations in immune function have been implicated in the pathogenesis of PCOS. Inflammatory cytokines and adipokines produced by adipose tissue contribute to insulin resistance, dysfunction of the ovary, and hyperandrogenism in PCOS women [10].

PCOS PATHOPHYSIOLOGY

Hormonal Imbalance (↑ Androgens + Insulin Resistance)
↓
Hyperinsulinemia → Exaggerated Androgen Production
↓
Ovarian Dysfunction (Anovulation, Cyst Formation, Menstrual Irregularities)
↓
Metabolic Complications (Obesity, Dyslipidemia, Diabetes Risk)
↓
Influence of Genetic Susceptibility + Environmental/Lifestyle Triggers

PCOD PATHOPHYSIOLOGY

Multiple Ovarian Cysts
↓
Hormonal Imbalance → Irregular Menstrual Cycles
↓
Insulin Resistance + Hyperandrogenism
↓
Disrupted Follicular Maturation & Ovulation
↓
Clinical Manifestations (Acne, Hirsutism, Weight Gain)
↓
Complications (Infertility, Metabolic Disturbances)

SYMPTOMS

Here are the common symptoms of PCOS (Polycystic ovarian syndrome) and PCOD (Polycystic ovarian disorder):

1. Irregular Menstrual Cysts/Amenorrhea
2. Hyperandrogenism
   - -Hirutism (excess hair growth)
   - -Acne
   - -Male-pattern baldness
3. Ovarian Cysts
4. Weight Gain
5. Fertility Issues
6. Insulin Resistance
7. Metabolic Complications.
   - -High blood pressure
   - -Dyslipidemia
8. Mood Changes, Depression, Anxiety
9. Obstructive Sleep Apnea

CAUSES

The exact causes of PCOS and PCOD are not fully understood, but several factors contribute to their development:

1. Genetic Predisposition: Family history plays a significant role
2. Hormonal Imbalance: Insulin resistance, hyperandrogenism and disrupted ovulation.
3. Insulin Resistance: Hyperinsulinemia exacerbates androgen production and ovarian dysfunction

4. Hypothalamic-Pituitary-Ovarian Axis Dysfunction: The HPO axis controls reproductive hormones
5. Chronic Low-Grade Inflammation: Many women with PCOS have a slightly elevated level of inflammation
6. Environmental Factors: Lifestyle, diet, and exposure to endocrine disruptors
7. Metabolic Factors: Obesity, metabolic syndrome, and cardiovascular risk factors.
8. Skin Issues
9. Hair Loss
10. Obesity
11. Non-Alcoholic Liver Disease [11-13].

RISK FACTORS

1. Genetic/Family History: Specific gene variants related to insulin resistance and hormonal imbalance may play a role
2. Insulin Resistance: Type 2diabetes
3. Obesity: Excess weight, particularly central obesity, can worsen symptoms
4. Early Menarche: Onset of menstruation at an early age may increase risk
5. Androgen Excess: High levels of androgens can lead to symptoms like hirsutism and acne
6. Ovulatory Dysfunction: Irregular menstrual cycles and anovulation.
7. Lifestyle Factors: Poor diet, sedentary lifestyle, and stress may contribute [14-15].

COMPLICATIONS

1. Metabolic Complications
-Insulin resistance and type 2 diabetes
-Dyslipidemia (High cholesterol and triglycerides)
-Hypertension
-Cardiovascular disease
2. Reproductive Complications
-Infertility and difficulty conceiving
-Miscarriage and pregnancy complications
-Menstrual irregularities and amenorrhea
3. Psychological Complications
-Depression and anxiety
-Low self-esteem and body image issues
-Eating disorders
4. Other Complications
-Sleep apnea
-Fatty liver disease
-Increased risk of endometrial cancer
5. Mental Health: Untreated PCOS and PCOD can lead to long-term mental health consequences [19-18]..

DIAGNOSIS

Polycystic ovary syndrome (PCOS) is a complex endocrine disorder that affects women of reproductive age. Diagnosing PCOS requires a comprehensive approach that incorporates clinical, hormonal, and ultrasound evaluations [19].

Criteria

The Rotterdam criteria are widely used to diagnose PCOS. According to these criteria, a diagnosis of PCOS can be made if at least two of the following three features are present:
1. Ovulatory Dysfunction: Irregular or absent menstrual cycles, which can lead to infertility and other reproductive issues.
2. Hyperandrogenism: Clinical and or biochemical signs of excess androgen levels, such as hirsutism (excess hair growth), acne, and male-pattern baldness.
3. Polycystic Ovaries: Presence of multiple cysts on the ovaries, as detected by ultrasound [20-22].

HORMONAL EVALUATION

Hormonal testing is an essential component of PCOS diagnosis. The following hormones are typically evaluated:
1. Androgen Levels: Elevated levels of androgens, such as testosterone, can contribute to symptoms like hirsutism and acne.
2. Follicle-Stimulating Hormone (FSH): FSH levels may be normal or low in women with PCOS.
3. Luteinizing Hormone (LH): LH levels may be elevated in women with PCOS.
4. Medical History: A thorough medical history is essential to diagnose PCOS. Healthcare providers may ask about menstrual history, symptoms, and family history.
5. Ruling out Other Conditions: Other conditions, such as thyroid disorders, congenital adrenal hyperplasia, and prolactinoma, may need to be ruled out to confirm a diagnosis of PCOS [23].

IMPORTANCE IF ACCURATE DIAGNOSIS

Accurate diagnosis is crucial for developing an effective treatment plan and managing symptoms. A healthcare professional can provide a proper diagnosis and guide treatment.
BY understanding the diagnostic criteria and evaluations, healthcare providers can provide a comprehensive approach to diagnosing and managing PCOS [24].

TREATMENT

Treatment for PCOS and PCOD typically involves a combination of lifestyle modifications, medications, alternative therapies, guidelines include-
1. Prevalence-PCOS is the most common endocrinological disorder in women of reproductive age (affects 8-13%)
2. BMI and symptoms: Women with PCOS often have higher BMI. Excess BMI worsens PCOS symptoms
3. Guideline recommendation: Lifestyle management is the first-line treatment for PCOS
4. Implementation challenge: Applying lifestyle management through health services is difficult in practice
5. Need multidisciplinary, integrated care was the most common theme, women want health professionals who listen and are open to learning about PCOS [25-26].

SURGICAL OPTIONS

Ovarian Drilling: This surgical procedure can help stimulate ovulation and improve fertility in women with PCOS Fertility Treatments: IVF (in vitro fertilization) or CAPA IVM (in vitro maturation) may be recommended for women with PCOS who are struggling with infertility [27].

ALTERNATIVE THERAPY

1.Inositol
2.Probiotics
3.Acupuncture

MEDICATION ADHERENCE

Taking medicines regularly = better control+ better outcomes
"RIGHT MEDICINE, RIGHT TIME, EVERY TIME" means better hormone control, fertility, safety, and quality of life in PCOS&PCOD
1. Cycle regulation: Regular intake of hormonal pills keeps periods on time
2. Hormone balance: Anti-androgen and contraceptive pills reduce acne, excess hair, and hair loss
3. Metabolic protection: Metformin keeps blood sugar and insulin stable, prevents diabetes, weight gain, and heart risks.
4. Fertility support: Ovulation medicines work only if taken on correct days
5. Long-term safety: Adherence lowers risks of diabetes, hyper tension, infertility, and cancer.
6. Better confidence and mental health, visible improvements in skin, weight, cycles [28].

LIFESTYLE MODIFICATIONS

1. Weight Management: Achieve and maintain a healthy weight through a balanced diet and regular exercise
2. Dietary Changes:
-Focus on whole, unprocessed foods
-Include plenty of fruits, vegetables, whole grains, and lean protein sources
-Limit sugary drinks, refined carbohydrates, and saturated fats
3. Regular Exercise
-Aim for at least 150min of moderate intensity exercise/75 min of vigorous intensity exercise per week
-Incorporate strength training and high-intensity interval training for added benefits
4. Stress Management
-Practice stress-reducing techniques like yoga, meditation, or deep breathing exercises
-Get enough sleep (7-8hrs night) to help regulate hormones and metabolism
5. Healthy Habits
-Quit smoking and limit alcohol consumption
-Stay hydrated by drinking plenty of water
6. Follow medication and medical advice if prescribed.
7. Track menstrual cycles and symptoms like acne, hair growth, and mood.
8. Avoid Smoking And Alcohol [29-30].

CONCLUSION

Finally, we conclude that after thoroughly and revising numerous articles on PCOS and PCOD, it's clear that these complex hormonal disorders require a comprehensive approach to management. By synthesizing existing research and clinical guidelines, we have gained a deeper understanding of the distinct characteristics, symptoms, and treatment options for each condition. Effective management of PCOS and PCOD demands personalized care, lifestyle modifications, and multidisciplinary support with few pharmacist interventions that include:

1. Medication management
2. Patient education
3. Optimizing treatment outcomes
4. Improving adherence
5. Reducing complications

This article aims to provide a concise and informative overview, empowering individuals to better navigate these conditions and seek appropriate care.

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CONFLICT OF INTEREST

Authors are declared that no conflict of interest

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Not Applicable

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