

View Point

# Contemplation on Polycystic Ovarian Syndrome

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## I N F O

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## A B S T R A C T

Polycystic ovary syndrome (PCOS), also called Stein-Leventhal syndrome, is a metabolic disorder. It affects 4-20% of women globally. According to the National Health Portal Report 2016, the estimated prevalence of PCOS by Rotterdam's criteria was 9.13% in South India. If not monitored in time, the condition can have severe health impacts. The underlying cause of PCOS is known. Genetic inheritance, poor lifestyle, fast food intake, sedentary lifestyle, and obesity all invariably influence the risk of PCOS. Imbalanced hormonal activity increases LH:FSH ratio, androgen excess, and insulin resistance causing polycystic ovaries and anovulation. Affected clients present with clinical signs of hyperandrogenism like acne, hirsutism, alopecia, acanthosis nigricans, irregular periods, anxiety, depression, stress, etc. Rotterdam criteria, the Androgen excess society, American Association of Clinical Endocrinologists (AACE) diagnose PCOS based on anovulation, hyperandrogenism, and polycystic ovaries. Management of PCOS includes oral contraceptive pills, progestin therapy, ovulatory stimulants, insulin-sensitising agents, antiandrogens, and vitamin D. In addition to this, lifestyle modification with good dietary changes, moderate exercise, and stress management also yield positive results in reverting PCOS.

**Keywords:** Polycystic Ovarian Syndrome, Hormonal Imbalance, Hyperandrogenism, Anovulation, Insulin Resistance, Oral Contraceptive Pills, Progestin therapy, Lifestyle Modification

Polycystic Ovary Syndrome (PCOS), also known as Stein-Leventhal syndrome, is a metabolic disorder characterised by hormonal imbalance affecting women of the reproductive age group. Various genetic and environmental factors predispose the risk of PCOS.<sup>1</sup> The risk of PCOS among women in early reproductive years is high (approximately 1 in 10).

### Global Burden of PCOS

4-20% of women across the world are affected by PCOS.<sup>2,3</sup> In 2017, it was reported that the incidence of PCOS among women aged 15-49 years was 1.55 million globally, which

was an increase of 4.47% (2.86-6.37%) from 2007 to 2017.<sup>3</sup> The prevalence of PCOS in India ranges between 3.7% and 22.5% based on various diagnostic criteria.<sup>4</sup> It is found to be 2% to 7.5% in a few Asian countries. According to the National Health Portal, in South India, its prevalence by Rotterdam's criteria was 9.13%. Timely management of PCOS can prevent serious health impacts.

### Predisposing Factors of PCOS

Although the precise origin of PCOS is unknown, the main causes of PCOS have been shown in Figure 1.<sup>5-12</sup>



Figure 1. Predisposing Factors of PCOS

### Pathophysiology of PCOS

Figure 2 shows the pathophysiology of PCOS.

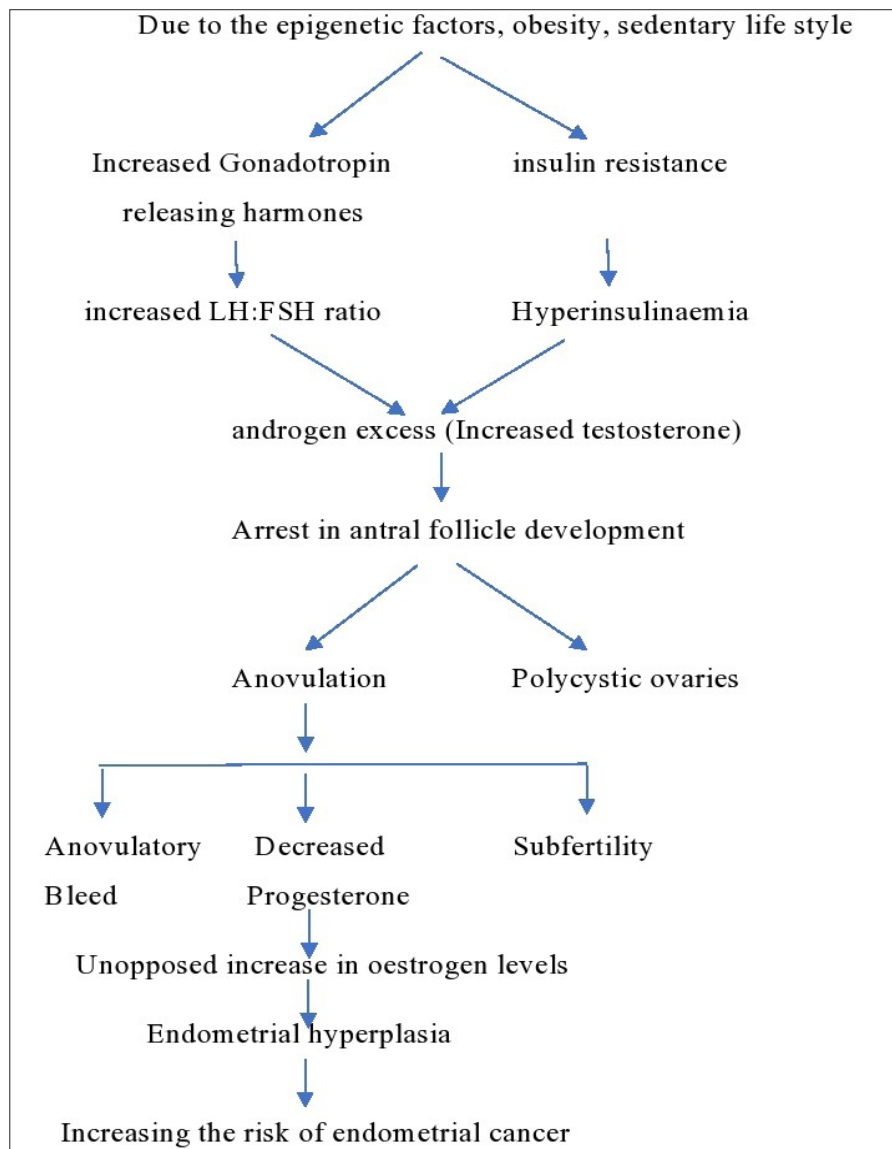


Figure 2. Pathophysiology of PCOS<sup>13,14</sup>

## Signs and Symptoms of PCOS

The various signs and symptoms of PCOS have been shown in Figure 3.

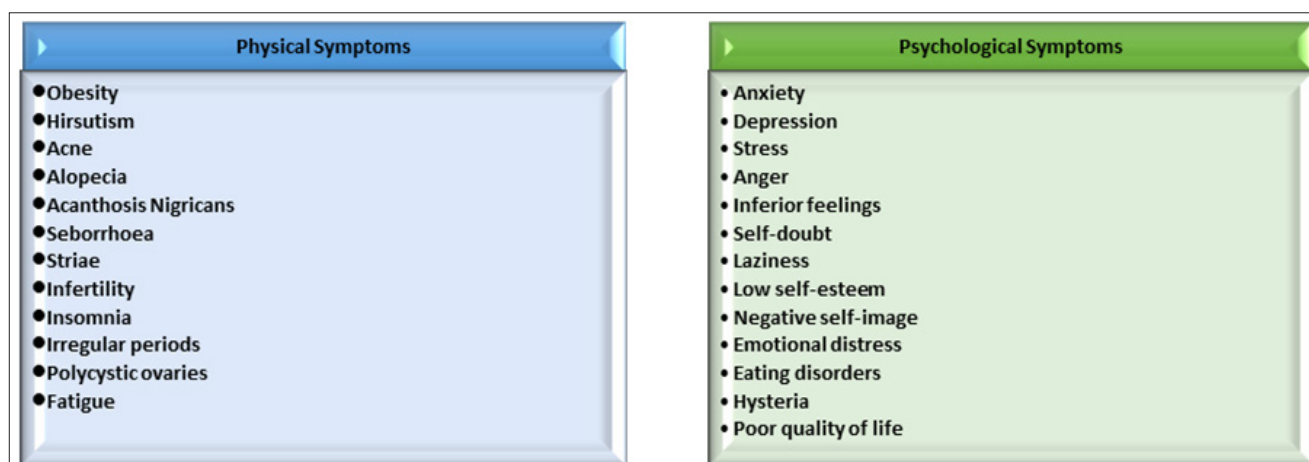


Figure 3. Signs and Symptoms of PCOS<sup>15</sup>

### Assessment and Diagnosis of PCOS

#### 1. History Collection

A thorough health history is needed including the following:

- Menstrual history (age at puberty, regularity of cycles, duration of cycles, amount of bleeding, first day of last menstrual period)
- Past medical history for ruling out any endocrinal abnormalities like DM, HT, and hepatitis
- Family history of malignancy of breast, cervix, and ovaries
- Personal history to elicit details of dietary habits, lifestyle, marital status, sexual dysfunction, and any intake of drugs for previous illnesses

#### 2. Health Assessment

Health assessment is done for observing signs of hyperandrogenism like acne, hirsutism, oily skin, baldness, excess hair growth in unwanted places, acanthosis nigricans, and obesity.

#### 3. Biochemical Markers of PCOS

- Elevated testosterone levels (> 3.6 pg/ml)
- Elevated LH: FSH ratio (usually 3:1 or greater)
- Elevated blood glucose levels (> 120 mg/dl)
- Elevated blood cholesterol levels (> 200 mg/dl)
- Elevated androstenedione levels (> 3.1 ng/ml)
- Elevated anti-mullerian hormone levels (> 6.8 ng/dl)
- Hormonal blood tests including oestrogen, sex

hormone-binding globulin, dehydroepiandrosterone sulfate, androstenedione, thyroid-stimulating hormone, and prolactin<sup>16</sup>

- Hormones-related adrenal function tests, for example, 17-hydroxyprogesterone
- 4. Ultrasonography to identify Multiple Immature Follicles
- 5. Magnetic Resonance Imaging
- 6. Computed Tomography

### Diagnostic Criteria for PCOS

- Rotterdam criteria (2004) diagnoses PCOS based on the presence of any two of the three conditions mentioned below: Clinical and/ or biochemical hyperandrogenism, oligo-ovulation or anovulation, and polycystic ovaries.<sup>17</sup>
- Androgen Excess Society (AES) (2006) diagnoses PCOS on the basis of androgen excess or hyperandrogenism and defines PCOS by the presence of hyperandrogenism, dysfunctional ovaries and/ or polycystic ovarian morphology, in the absence of other diseases.<sup>18</sup>
- As per the American Association of Clinical Endocrinologists (AACE) (2015), PCOS diagnosis is done if a person meets any two of the following three conditions: chronic anovulation (invariable cycle length > 35 days), clinical or biochemical hyperandrogenism, and polycystic ovaries.<sup>19</sup>

### Complications of PCOS

There can be various complications of PCOS, some of which have been shown in Figure 4.

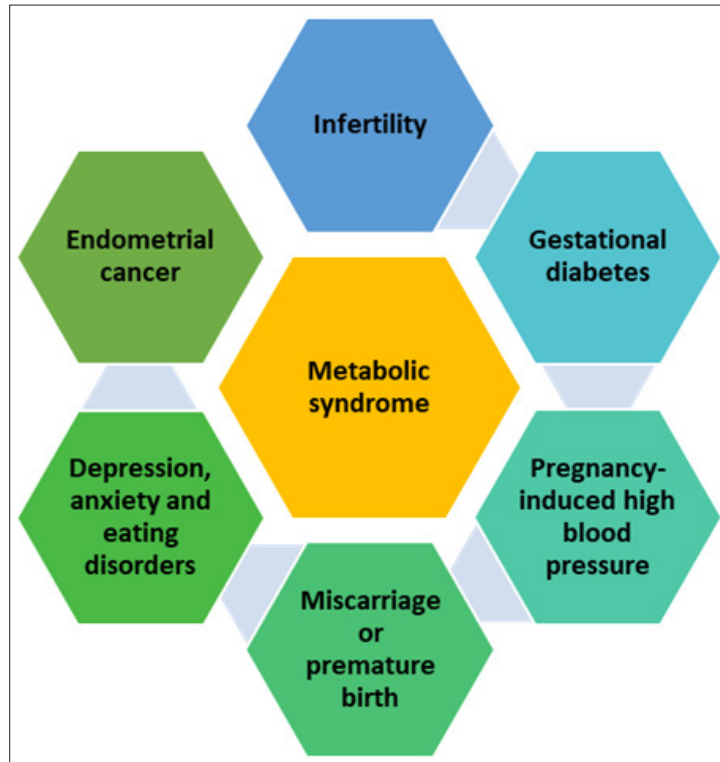


Figure 4. Complications of PCOS<sup>20</sup>

## Management of PCOS

### Medical Management

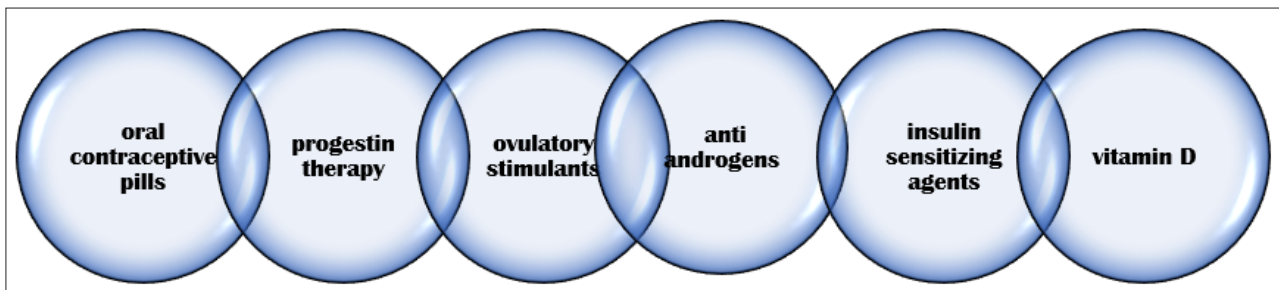


Figure 5. Medical Management of PCOS

Figure 5 shows certain methods of managing PCOS. This management can be done as follows:

**Oral Contraceptive Pills:** These pills lower LH secretion, increase sex hormone-binding globulins, and decrease free testosterone levels. Regulating these hormonal imbalances can correct menstrual irregularities, unwanted hair growth, and acne.<sup>21,22</sup>

**Progestin Therapy:** Intake of progestin for 10 to 14 days every 1 to 2 months can improve menstrual irregularities and prevent endometrial cancer. The progestin-only minipill or progestin-containing intrauterine device is chosen to prevent pregnancy.<sup>22</sup>

**Antiandrogens:** Antiandrogens work by inhibiting androgen-

binding receptors or inhibiting the 5-alpha reductase enzyme, thereby lowering androgen production, for example, spironolactone, cyproterone acetate, flutamide, and finasteride.<sup>21,22</sup>

**Ovulatory Stimulants:** These drugs aid increased hormonal secretion, thereby allowing the maturation and release of an egg, for example, clomiphene and letrozole.

**Insulin-sensitising Agents** like metformin decreases hepatic glucose synthesis and increases insulin sensitivity.<sup>23</sup>

**Vitamin D** supplementation helps in the development of mature follicles and regulates menstruation in women with PCOS.<sup>24</sup>

The other symptomatic treatments for hirsutism include

electrolysis, laser therapy, plucking, waxing, shaving, and bleaching.

### Lifestyle Modification for PCOS

- Dietary modification with a high-fibre, high protein, low cholesterol, and low-caloric diet is prescribed.<sup>25</sup>
- Complimentary therapies using flax seeds, fenugreek seeds, cinnamon, liquorice extract, and mint leaves have also proven effective in managing symptoms of PCOS.<sup>26-30,31</sup>
- A moderate exercise programme should be followed to maintain a good weight.<sup>32,33</sup>
- Effective stress management techniques like yoga and meditation are advised to overcome depression and anxiety.
- Sound sleep helps in hormonal regulation, hence a regular bedtime routine is to be followed.

**Conflict of Interest:** None

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