



PCOS: Dysmetabolic Syndrome & Its Impact In Female Life

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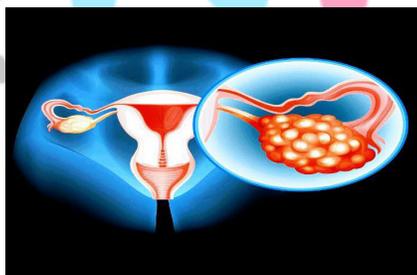
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Abstract : Polycystic ovarian syndrome is a one of the most common reproductive endocrine disorders among the women, affecting 8-15% of the female population. The worldwide prevalence rate 5% to 15%, while in India, It is approximately 5%-20%. The PCOS is hormonal disturbance and metabolic disorder that impact overall health due to excess androgen and insulin resistance. It is characterized by irregular menstruation, acne and diabetes mellites and obesity etc. The effective treatment of PCOD involves understanding its pathophysiology, diagnosis and management.

Index Terms - PCPS, Insulin resistance, hypothalamus-pituitary axis, metformin.

I. INTRODUCTION

Polycystic ovarian syndrome is one of the most common reproductive endocrine disorders among the women which affect 8-15% of the female population. The worldwide prevalence rate 5% to 15% , while in India, approximately . 5%-20%. The prevalence rate varies 2%-35% due to various factors such as location, population, diagnostic criteria and environment. It is characterized by irregular menstruation abnormalities, ovulatory dysfunction and hyperandrogenism etc. The term PCOD was a word described by Stein and Leventhal in 1935. The diagnostic criteria of PCOD mainly followed 3 major criteria; 1)chronic anovulation, 2) hyperandrogenism and 3) polycystic ovaries that are based on society guidelines on PCOD. ^(1,2) The endocrine system consists of major gland which is responsible for regulation and maintaining the major function to body.



In PCOD cases that gland involves such as hypothalamus, pituitary, ovaries, adrenal gland , and peripheral adipose tissue significantly contribute to hormone imbalance. ⁽³⁾ PCOD is not responsible only for anovulatory infertility but may also be associated with other metabolic disorders which including insulin resistance, increase weight (obesity), dyslipidemia neurological symptoms, and increase the risk of type -2 diabetes as well as cardiovascular disorder and its disease. ⁽⁴⁾

Etiology and risk factors of PCOD

Hyperandrogenic anovulation is also known as Stein – Leventhal syndrome and referred to syndrome “O” which signifies over nutrition , overproduction of insulin, ovarian confusion ovulatory dysfunction. 75% of women suffer from anovulation, with recurrent loss pregnancy occurring in 50%of women, with PCOD. PCOD is a medical disorder which is responsible for imbalance

in sex hormone, it is enhancing the level of DHEA-S, androsterone, prolactin and LH level beyond normal range, high or low estrogen. (3)

Insulin resistance: PCOD is a complicated metabolic disorder. Studies show an association between insulin resistance causing hyperinsulinemia, approximately 10% of women with type -2 diabetes and about 30-35% of women suffering from glucose intolerance. This is accountable for the production of testosterone which enhances abnormal ovulation as well as increases obesity due to hyperinsulinemia. Insulin drives augmented androgen production from adrenal and ovaries while alters gonadotropin secretion.(3)

Abnormal secretion of hypothalamus and pituitary glands: The abnormal secretion of hypothalamus and pituitary glands enhance the secretion of GnRH and LH, resulting in escalated ovarian androgen production in women with PCOD, while disrupting the sex hormone ratio between FSH and LH.(3)Genetic Factors: PCOS is genetically ovarian disorder, it occurs due to much exposure to androgen during fetal life which leads to permanent impact on gene expression that contributes to PCOS and after that to insulin resistance. (3,5)

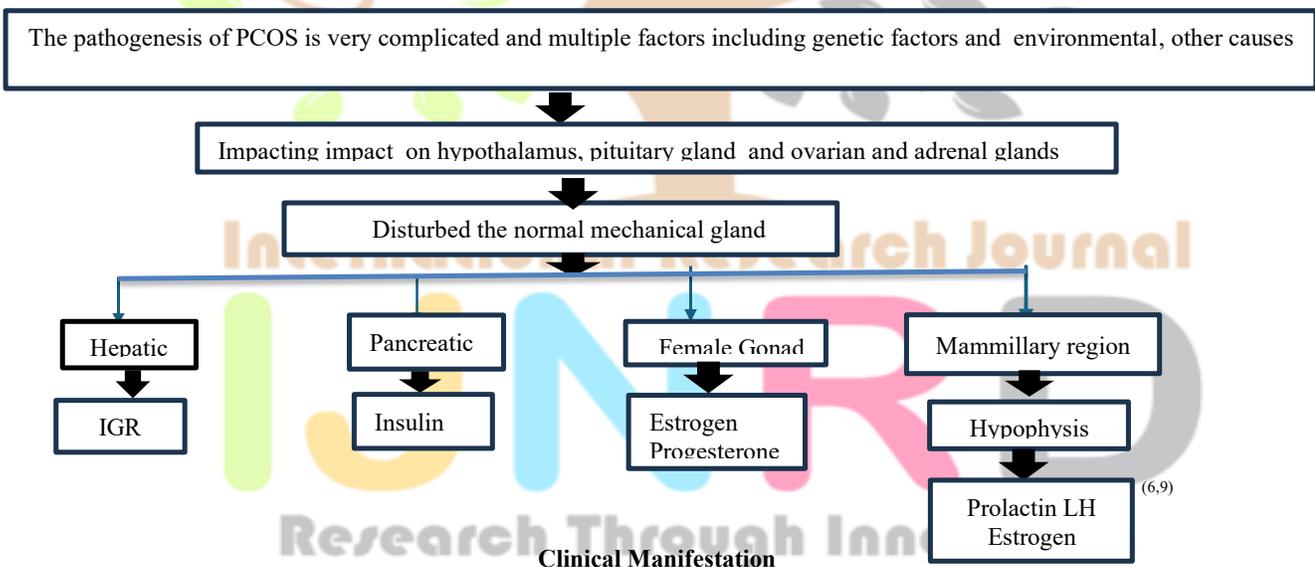
Obesity and Infertility: Obesity caused 90% of infertility among women who suffering from PCOS. A BMI > 30 and correlate with anovulation which leads to infertility. (6,7)

Bisphenyle A: Bisphenyle is a compound that is utilized in density, plastic consumer product and packing that lead to PCOS. Bisphenyle A plays an important role in ovarian dysfunction.(3)

Psychological : Psychological disorders can also be caused by PCOS. It may enhance stress level which disturbed normal cycle of menstruation as well as hormonal disturbances.

Lifestyle: A sedentary lifestyle, disturbed the eating pattern, lack of exercise or intensive physical activity and also various donating factors such as extreme weight loss, ovaries disorder and other endocrine disturbance.

Pathophysiology



There are various types of symptoms in patient with PCOS, which includes that exact cause is unknown but certain risk factors such as anovulation 3% women suffer, amenorrhea 30-40%, Metabolic disturbances, irregular menstruation among 15% women, infertility occurs due to chronic anovulation, Increased blood pressure, Obesity, male pattern baldness, hair loss, hair thinning approximately . 70-80%, hirsutism, acne and oily skin, high cholesterol levels, endometrial cancer, pain, increase the levels of androgen (4,7,8)

Diagnosis

Diagnostic information data should be obtained from laboratory ingestion by measuring the level of LH, FSH, TSH, prolactin, testosterone and dehydroepiandrosterone level to identify the hormonal imbalance⁽⁶⁾

Differential diagnosis.....

1. Hypothyroidism
2. Idiopathic hirsutism
3. LDL level increase
4. Anti-mullerian hormone (8)

Clinical considerations.....

1. Cushing syndrome

2. Thyroid dysfunction
3. Primary ovarian failure
4. Exogenous androgens increase (3)

Diagnosis based on Rotterdam criteria...

S/N	Phenotype	Androgen Excess	Ovulatory Disfunction	Polycystic ovaries
1	A	✓	✓	✓
2	B	✓	✓	
3	C	✓		✓
4	D		✓	✓

(6,9)

Screening

1. Ultra sonography
2. MRI

Treatment

PCOS cannot be cured but treatment can help to reduce the impact of symptoms. ⁽¹⁾

Nonpharmacological

Dietary management....

A well-balanced diet cannot in weight management and helps to prevent long risks of PCOD, CVD, and diabetes Mellitus etc. Some products should be removed in her diet.....

- ❖ Alcohol, caffeine and nicotine etc.
- ❖ Limit protein in her diet.
- ❖ Saturated fats and red meat
- ❖ Pocked foods(processed food)

Some food adds in her diet...

- ❖ Whole grains and ragi
- ❖ Geen leafy vegetables, minerals and vitamins as well as dry foods

Physical exercises

- ❖ The women and girls should engage in physical exercise and yoga daily for at least 30 mints such as walking, running, laughing and dancing etc.
- ❖ Maintain a consistent routine and sleep pattern^(1,3,4)

Pharmacological Management

Hormonal contraceptive pill : The hormonal contraceptive pill is a first line treatment to reduce the intensity of symptoms such as abnormalities of menstruation, hirsutism, and acne. It may be utilized as oral or vaginal contraceptive drugs.⁽²⁾

Ovulation Induction Medication.

Metformin: Metformin drug suggested by endocrine society among women who suffer PCOS. It is a second line drug that helps to reduce the severity of symptoms and improve as well as maintain menstruation among adolescents. Monotherapy can help to maintain weight and reduce insulin resistance.⁽²⁾

Glucocorticoids: Prednisone and dexamethasone have been used to persuade ovulation. These drugs are advised in low dose 0.25 mg at night in sleeping time.⁽³⁾

Clomiphene Citrate: It is a selective estrogen modulator drug which is used to enhance ovulation in female, who suffering from polycystic ovarian syndrome. This drug impact on estrogen receptors in hypothalamus to enhance the release of gonadotropin hormone. These GnRH work on the pituitary gland for production and increased secretion of FHS level, which is responsible for the follicular growth in the ovary. The prescribed dose is 50 mg/day, starting on 2 days to 5 days of menstruation cycle.⁽⁶⁾

Letrozole: Letrozole is an aromatase inhibitor that helps to convert androgen into estrogen that resulting in increase the level FSH secretion from pituitary gland through the negative feedback loop of estrogen. The estrogen dose of drugs is 2.5mg - 7.5mg/day and starting from 3to7 day of menstruation cycle. These drugs have higher rate of inducing ovulation.⁽⁶⁾

N- Acetyl Cysteine : N- Acetyl cysteine has antioxidants required for development of glutathione in body, which reduce the oxidative stress level and prohibit hyperinsulinemia.⁽³⁾

Hyperandrogenism : Hyperandrogenism requires long term treatment for up to several months for effectiveness. Cosmetic therapy should be employed using drugs and medical. The several cosmetic surgical procedures used such as tweezing, shaving and waxing etc. while electrolysis and laser treatment will remove permanent hair in the body; however permanent method

should not be used for up to 6 months as well as in mild androgen cases. The medication used in mild androgen cases, OCP effective, in moderate to severe cases anti-androgenic medication is effective.(2,4)

Surgical Management

Surgical management is another way to manage and address the symptoms of PCOD in case pharmacological and non-pharmacological therapies prove ineffective for patients. So used laparoscopic drilling method on patient to manage the symptoms of PCOD by devasted androgen producing tissue, which help to balance and restoring hormonal level among the patient.(3,6)

Conclusion

Polycystic ovarian syndrome is an endocrine disorder among women. It is characterized by irregular menstruation cycles and acne as well as hirsutism. The exact cause of PCOS is unknown, but it is some associated factors with PCOS such as hyperandrogenism and insulin resistance. PCOS is prevented modification of lifestyle and physical exercises as well as treated by pharmacological, non-pharmacological and surgical management.

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REFERENCES

1. Ganie Ashraf Mohd et al. on topic Prevalence phenotypes, Comorbidities of Polycystic Ovary Syndrome Among Indian women : in oct 2024;published in JAMA Netw Open 2024;7(10)e2440583.
2. Lorena I Reasquin, et al. on topic Polycystic Ovarian Disease : published in National library of medicine ; in November 2022 : ncbi.nlm.nih.gov
3. MUHAS C. NISHAD K. M., UMMUNNOORA K. P., JUSHNA K., SAHEERA K. V., DILSHA K. P. : on topic polycystic ovary syndrome (PCOS)–an overview : published in10 July 2018. Email: muhasc@gmail.com
4. Yali Bo, on topic Comparative efficacy of pharmacological interventions on metabolic and hormonal outcomes in polycystic ovary syndrome: a Network Meta-Analysis of Randomized controlled trials: *BMC Women's Health* volume 25, Article number: 64 (2025)
5. Pingping ,chao Chen and Yan Sun et al, on topic **Physiopathology of polycystic ovary syndrome in endocrinology, metabolism and inflammation** and <https://doi.org/10.1016/j.heliyon.2022.e11010>Get rights and content
6. M. Rababa' h et al, on topic an update of polycystic ovary syndrome: causes and therapeutics options; published in open access , Volume 8, Issue 10, October 2022, e11010; <https://doi.org/10.1016/j.heliyon.2022.e11010>Get rights and content
7. Polycystic ovarian syndrome , published by world health organization: in 7 February 2025;who.int/news-roo.
8. Diabetes and polycystic ovary syndrome; published by centrals for disease control and prevention in America; in 14 may 2024, <https://www.cdc.gov>.
9. Kathleen M Hoeger, Anuja Dokras, Terhi Piltonen, on topic **on PCOS: Consequences, Challenges, and Guiding Treatment** : *The Journal of Clinical Endocrinology & Metabolism*, Volume 106, Issue 3, March 2021, Pages e1071–e1083, <https://doi.org/10.1210/clinem/dgaa839> **Published** 19 November 2020