

COMPARATIVE ASSESSMENT ON PHARMACOTHERAPY OF PCOS OVER TRADITIONAL AND MODERN MEDICINE

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ABSTRACT

Background: PCOS is multifaceted complex endocrinopathic disease affecting women. Etiology is not yet understood comprehensively. Irregular menstrual periods, Imbalanced level of hormone and presence of multiple cysts in ovaries are seen in PCOS person. Which has risk factors of infertility, miscarriage, cardiovascular disorder, anxiety, depression and type 2 diabetes mellitus. Pharmacotherapy of various system of medicine used for the treatment of PCOS along with lifestyle modification. **Objectives:** Conventional management of PCOS gives symptomatic relief along with lifestyle modification which may be temporary and with or without side effects. All systems of the medicine contribute to the prevention and control of the condition effectively but side effect and duration of treatment varies. In this

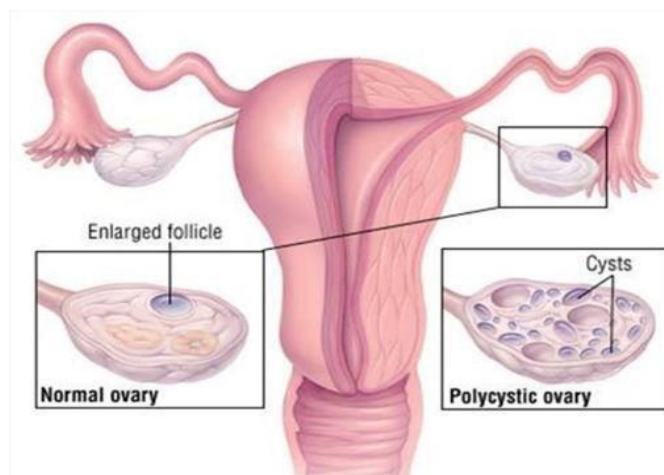
review pharmacotherapy of various system of medicines, side effects and duration are studied based on data provided from case studies and tools used.

KEYWORDS: Hormonal imbalance, Anovulation, Hyperandrogenism, Insulin Resistance, Ayurveda, Siddha, Homeopathy, Allopathy.

INTRODUCTION

Polycystic ovary syndrome (PCOS) is a common and complex disease, involving endocrine,

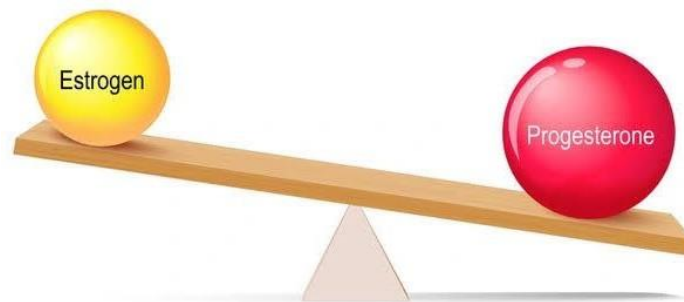
environmental, and behavioral factors that give rise to metabolic, reproductive, psychological and affective characteristics to women's health. WHO data shows that approximately 3.4% of women are affected by PCOS globally. In India, the disease is reported in about 9% of adolescent girls. Between the ages of 15 and 35, this disease is common in about 6 to 13% of women. It was first identified in 1935. It is also known as Stein-Leventhal syndrome. It is a condition in which the concentration of reproductive hormones in women such as estrogen, progesterone, LH, FSH leads to irregular menstrual cycles and ovarian cysts (benign masses on the ovaries). The clinical symptom complex is characterized by the presence of multiple cysts on the ovaries, oligomenorrhea or amenorrhea, anovulation and is associated with excessive body weight, infertility and insulin resistance. In addition to the physiological complications and psychological stress on the woman, this can lead to lack of confidence, poor quality of life, poor self-esteem, anxiety and possibly eating disorders.^[1]



ETIOLOGY

1. **Genetic cause:** Specific gene associated with the condition which have not been identified yet.
2. **Hormonal imbalance:** An imbalance in the release of the luteinizing hormone (LH) and the follicle stimulating hormone (FSH) from the pituitary has been implicated. The LH / FSH ratio is altered and the secretion of LH is higher than that of FSH resulting in increased androgen, testosterone and dehydroepiandrosterone (DHEA) productions
3. **Insulin resistance:** PCOS is strongly linked with hyperinsulinemia and insulin resistance. Theca cells of the ovary get activated by insulin resistance or hyperinsulinemia and generate excess testosterone by acting synergistically with LH hormone, which is the cause of hyperandrogenism.

4. **Intrauterine exposures:** Exposure to testosterone in uterus may predispose to the later development of PCOS.



5. **Environment / lifestyle factors:** Several lifestyle factors and environmental exposures have been associated with more severe PCOS phenotype.
6. **Obesity:** Although obesity is not believed to cause PCOS, it is known to exacerbate the symptoms of the disease.^[2]

DIAGNOSIS

- **MEDICAL HISTORY**

Menstrual periods, weight changes, other symptoms are observed.

- **PHYSICAL EXAMINATION**

Measure blood pressure, Body Mass Index (BMI), Waist size, checking the areas of increased hair growth for hirsutism.

- **PELVIC EXAMINATION**

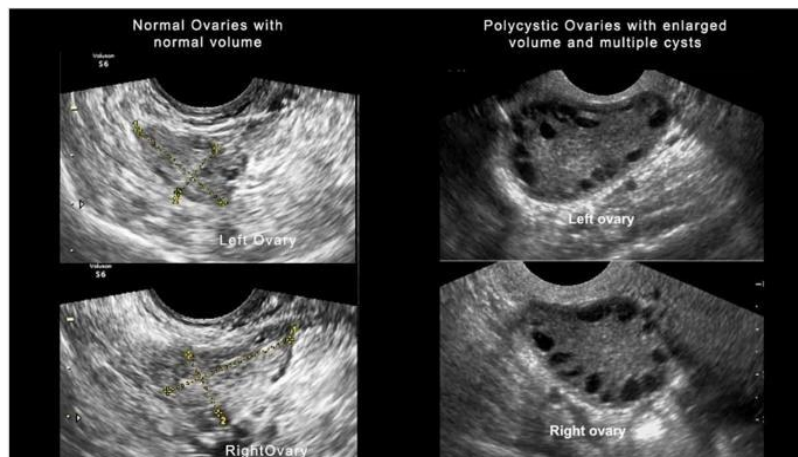
Examination for enlargement of ovaries or swollen by increase number of cysts.

- **BLOOD TEST**

Blood test for hormones androgens, TSH, T3, T4, FBS and Hb.

- **VAGINAL ULTRASOUND SONOGRAM/ SONOGRAPHY**

Use of the sound waves to take pictures of pelvic area of ovarian cysts and for checking the endometrium thickness and womb.



	1990 NIH Criteria	Revised Rotterdam 2003	Androgen Excess PCOS Criteria
Hyperandrogenism	A. Clinical and/or biochemical signs of hyperandrogenism	A. Clinical and/or biochemical signs of hyperandrogenism	A. Clinical and/or biochemical signs of hyperandrogenism
Ovulation	B. Chronic anovulation	B. Oligo/anovulation	B. Oligo/anovulation
Ovarian Morphology	_____	C. Polycystic ovarian morphology	C. Polycystic ovarian morphology
Is exclusion of other endocrinopathies needed for diagnose?	Yes	Yes	Yes
Number of criteria needed	Both A and B as well as exclusion of other endocrinopathies	2 of the 3 criteria A, B, C well as exclusion of other endocrinopathies	Criteria A plus one of either criteria B or C together with exclusion of other endocrinopathies

CLINICAL SYMPTOMS	COMPLICATION
➤ Irregular menstrual periods	➤ Type 2 diabetes mellitus
➤ Central obesity.	➤ Hypertension
➤ Reproductive manifestation	➤ Dyslipidemia - elevated triglycerides or decreased high-density lipoprotein (HDL),
➤ Clinical hyperandrogenism	➤ Cardiovascular disorder
➤ Acanthosis nigricans	➤ Anxiety and depression
➤ Metabolic syndrome	➤ Sleep apnea
➤ Psychological problems	➤ Endometrial carcinoma
	➤ Premature delivery
	➤ Early miscarriage
	➤ Gestational hypertension – preeclampsia,
	➤ Low birth weight or macrosomia. ^[3]

METHODOLOGY

• OBJECTIVES

- * To study the treatment protocol followed for various system of medicine
- * To study the duration of treatment for PCOS for various system of medicine

- * To study the side effects and risk factors of drugs used in various system

• TOOLS USED FOR THE STUDY

*Dependent variables of various case studies are investigated and categorized.

*Test measures of various laboratory tests.

MANAGEMENT OF PCOS

Non-Pharmacological	Pharmacological	Surgical
Diet	Pharmacotherapy Based On Allopathy	Laparoscopic Ovarian Drilling
Exercise	Pharmacotherapy Based On Ayurveda Medicine	Bariatric Surgery
Weight reduction	Pharmacotherapy Based On Homeopathy Medicine	
	Pharmacotherapy Based on Siddha Medicine	

POSSIBLE LINE OF TREATMENT IN ALLOPATHY

Allopathic medicine primarily focuses on the signs and symptoms of PCOS. It is a chemical substance introduced into the human body to destroy symptoms and relieve pain in patients. Allopathic medicine has side effects, the most notable of which is the human body's ability to heal itself. When using these allopathic drugs, we will paralyze activity to prevent immediate pain and slow down the recovery process.

INSULIN SENSITING AGENT

METFORMIN

Uses: Metformin improves insulin sensitivity in peripheral tissues.

Mechanism of Action: By lowering hepatic glucose production, boosting glucose absorption, and reducing hepatic glucose synthesis.

Side effects: Nausea, vomiting, diarrhoea, and abdominal distension.

FERTILITY ENHANCEMENT AGENTS

CLOMIPHENE CITRATE

Clomiphene citrate is a selective estrogen receptor modulator (SERM)

Uses: Clomiphene citrate (CC) is the drug of choice for ovulation induction in polycystic ovariansyndrome in adolescents.

Mechanism of Action: By inhibiting estrogen receptors in the hypothalamus, CC works as

an anti-estrogen, increasing the pulse width of gonadotropin-releasing hormone (GnRH) in the anterior pituitary as well as an increase in follicle-stimulating hormone production (FSH). Luteinizing hormone (LH) is a hormone that aids in the development of follicles.

Side Effects: Ovarian enlargement, Hyperstimulation syndrome, multiple pregnancies, hot flushes, gas, bloating, and fatigue.

LETROZOLE

Aromatase Inhibitors

Uses: Letrozole used for inducing ovulation.

Mechanism of Action: Aromatase transforms androgens into estrogen. The sensitivity of the follicles to FSH rises when the pituitary secretes more FSH, increasing the ovulation rate.

Side Effects: Hot flushes, arthralgia, head ache, dizziness.

INOSITOL

Uses: Dietary supplement, aids insulin signaling, Menstrual periods and ovulation can be improved.

STATIN DRUGS

Uses: Improving the lipid profile and, as a result, decreasing the risk of cardiovascular disease would be a successful PCOS therapy.

Mechanism of Action: A (HMG-CoA) reductase is essential for cholesterol production. HMG- CoA is transformed to mevalonate when this enzyme is inhibited the process thus limiting cholesterol synthesis.

ORAL CONTRACEPTIVES (Combination of Estrogen and Progesterone)

Uses: Oral Contraceptives is to control menstruation. It also reduce hirsutism, Acne, and hirsutism by lowering testosterone levels.

Mechanism of Action: A Combination of oral contraceptives and antigens to lower testosterone levels and alleviate symptoms while preserving the endometrium.

Side Effects: nausea, weight gain, depression, urticarial.

MEDROXYPROGESTERONE ACETATE

Uses: Improves insulin sensitivity and lipid profile in PCOS patients, Amenorrhea, or irregular uterine bleeding can be treated with medroxyprogesterone acetate.

Mechanism of Action: Ovarian androgen production is suppressed by monthly progestogen

therapy.^[4]

POSSIBLE TREATMENT LINE IN AYURVEDA

Ayurveda often focuses on preventative measures such as a healthy diet, reducing stress, and improving the body's flexibility to build the body's strength and endurance to maintain good overall health. Therefore, managing the disorder includes controlling obesity and insulin resistance, correcting hormonal imbalances, strengthening and restoring the female reproductive system, and detoxifying the body.

Effective Panchakarma Therapy for Successful Management of PCOS Ayurvedic Panchakarma Therapy works on the imbalances that lead to PCOS such as slow metabolism, insulin resistance, reproductive hormone imbalance, unbalanced fat metabolism, etc., instead of taking a short-sighted approach of just controlling symptoms. Panchakarma helps cleanse, detoxify and restore hormonal and metabolic imbalances that plague women with PCOS.

1. Vamana (vomiting treatment) is the best therapy to remove Kapha Dosha.
2. Virechana (purification therapy) normalizes the functions of Pita and Agni
3. Basti (therapeutic enema) is one of the most effective Panchakarma treatments for PCOS. It stimulates fertility ensuring healthy conception.
4. Nasya (nasal drops) stimulates the olfactory nerve and limbic system, which in turn stimulates the hypothalamus, leading to stimulation of gonadotropin-releasing hormone (Gn-RH)

First 7 days

Agnitundi vati

Arogyavardani vati Dusmularistha

After 7 days

Mahanarayan tel Dusmool kwath Mahanarayan tel Sadavindu tel Dusmularistha Suryanamaskar Sukshma vyayam.

After 15 days

Satawari Churna Satapuspa Churna

Patient was advised for follow up after 1 months. Various drugs that are used in this case are discussed below: *Agnitundi vati* improves the *Mandagni* and provide relief in pain because of its main ingredient i.e. *Kuchila (Strychnos Nux-vomica Linn)* which have

property of *Deepan*, *Pachan* and *Vednasthapan*. *Aaroghyavardhini Vati*, *Aaroghyavardhini Vati* Acts on *rasa* and *rakta dhatu* and helps in “*prasadbhuta raja nirmitee*” (i.e., quality follicular development). It stimulates functions of liver (5).

POSSIBLE TREATMENT LINE IN HOMEOPATHY TREATMENT

Homeopathic medicine is not only simple, safe, and non-toxic, but is also based on scientific principles. These are the curative, preventive, promotional and rehabilitative aspects of health care. It cures acute infectious diseases and is useful in chronic diseases with deep or complex etiology. The exact cause of PCOS is unknown, but in homeopathy they believe that hormonal imbalance and genetics play an important role in the pathogenesis, producing higher levels of androgens, influence development and liberation of the egg during ovulation. The results influence the consequences of reproductive, metabolic and psychological aspects.

Homeopathic treatment may be aimed at correcting disturbances in ovulation. It seeks to remedy the multifaceted effects by addressing underlying hormonal and physiological imbalances.

Common and effective medications for PCOS/PCOS are

- **NATRUM MUARTICUM:** Used in irregular and suppressed menstrual condition.
- **PULSATILLA:** used in scanty and painful menstruation. Side effects: fatigue, bloating, nausea, vomiting
- **CALCAREA CARB:** Used to treat quite heavy and longer menstrual cycle. It can also be used to treat weight gain.
- **THUJA OCCIDENTALIS:** This medication is often prescribed to women who have multiple cysts in the ovary.

OTHER MEDICINES

- **APIS MELLIFICA:** Used in cases of PCOS accompanied by stitching pain
- **LACHESIS:** Confused with PCOD which is an aversion to tight clothing
- **GRAPHITE:** Used to treat PCOD with constipation^[6]

POSSIBLE TREATMENT FOR SIDDHA

Siddha system of medicine is the main cause of PCOS. It may be due to vatham and kabam disorders. This is why bitter herbs are used to normalize disturbed moods. The treatment regimen aims to reduce vatham using an initial purgative, then induce ovulation, regulate the

menstrual cycle, and increase the chances of fertility; thus related symptoms such as hyperandrogenism, obesity and insulin resistance due to altered kabam can be better controlled.

MEDICATION

1. **KALYANAMURUGU:** It can be given for any tumor like abnormalities in uterus and ovaries.
2. **KARUNSEEGARAM:** Prescribed for the management of menstrual abnormalities.
3. **NOCHI:** regularizes the imbalanced vatham so that the natural force essential for ovulation in PCOS can be restored
4. **MALAI VEMBU:** fertility enhancement through purgative action
5. **NILAVAAKAI:** Lowering the high cholesterol level during the PCOS Condition and Anti – diabetic effect.
6. **NELLIKKAY:** It is used for anti-diabetic activity. Lipid lowering effect.

COMMON SIDE EFFECTS OF SIDDHA MEDICINES

Mercury is used extensively in the preparation of siddha medicines after purification, it may cause neuromyotonia (intolerable severe neuropathic pain).^[7]

STATISTICAL ANALYSIS OF TREATMENT

S. NO	Medical System and Medicine	Patient Count	Duration of Treatment	Improvement and Response	Percentage
1.	HOMEOPATHY Natrum muriaticum Lycopodium clavatum Pulsatilla nigricans Calcarea carbonicum Phosphorus Borax Graphitis Sepia officinalis	30 Patients	25 weeks	a. Excellent response: 8 patients b. Good response: 6 patients c. Moderate response: 4 patients d. Mild response: 10 patients e. Poor response: 2 patients	72%
2.	AYURVEDA Nidan parivarjana, Panchakarma, Agnitundi vati, Arogyavardhini vati, Dasamularishta, Sooryanamaskar, Satawarichurna, Satapushpa churna	5 Patients	15 – 30 Days	Weight -reduced to 5 kgs, Facial hair growth -reduced, Pain during menstruation reduced, White discharge – decreased, Mood swings - better result	80%
3.	SIDDHA Gaarpayaayuilagam	40 Patients	14 days – 3 Months	Good – 17 Cases Moderate – 16 Cases Poor – 7 Cases	76%
4.	ALLOPATHY	80 Patients	6 Months	Induce Ovulation in PCOS	48%

	Clomiphene Citrate, Metformin			Patients	
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DISCUSSION

Conventional management of PCOS involve symptomatic treatment and lifestyle modification along with weight reduction. The drugs used for symptomatic relief do not give permanent cure of the disease. Homeopathy corrects hormonal disturbance and brings harmony without risk of side effects but which require long duration of treatment. Siddha formulations are effectively used for PCOS management but which has related complication. Ayurveda gives holistic approach by detoxification and personalized treatment which addresses root cause, bring normal balance to the body.

CONCLUSION

All three systems of medicine contribute to the prevention, mitigation, palliation, and treatment of PCOS effectively. Siddha and Ayurvedic treatment show the good result with least or nil side effects in comparison to allopathic systems of medicine, as the latter leaves some side effects behind which is a matter of concern. With the implementation of any one of the above therapies, a woman will see an improvement in many if not in all of her symptoms. The Management is almost alike in each case showing wonderful results when acted upon. Any of the regimen, of the three therapies, can be opted which depends upon the choice of a patient. Allopathic treatment manifests quick responses, while the Ayurvedic and siddha systems of medicine show slow response in the treatment of PCOS. These treatment systems overall show fewer side effects and have low toxicity thus making them a good candidate for treatment of PCOS and they hold a great potential in future. Ayurvedic treatment also involves in the PCOS prevention but other treatment are used for cure only sign and symptoms.

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