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Early Identification of Predisposing Factors of Pcos: A Survey

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ABSTRACT

PCOS is the most common endocrinal metabolic disorder which leads to severe consequences to female health, including rates of infertility, hirsutism, excess androgen level, insulin resistance, and irregular menses. PCOS is caused due to hormonal imbalance. Women with PCOD have small fluid filled sacs on the ovaries. Women's suffering from PCOS are at higher risk of diabetes, metabolic syndrome, heart disease, and high blood pressure, and also increased anxiety and depression. PCOD is a heterogenic condition which became a challenge for scientific researchers. PCOS affects 5-10% women in their reproductive age groups. Proper treatment, medication; life style changes can manage the symptoms of PCOD. A survey was conducted considering a few predisposing factors in PCOS. The survey included its diagnosis and A-line treatment measures. To summarize this survey, the changes in these factors helps in managing the symptoms of PCOS.

Keywords: ovarian cyst, infertility, insulin resistance, in vitro fertilization, PCOD, hormonal imbalance, DHA, anti-Mullerian hormone.

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CONTENTS

1. Introduction.....	01
2. Recent Studies.....	02
3. Conclusion.....	03
4. References.....	04

1. Introduction

PCOS was first reported by stein and Leventhal in the year 1935. PCOS is the most common hormonal reproductive problem in women of childbearing age. It can affect not just the women menstrual cycle, fertility, hormones and appearance but also her overall health, increasing risk for diabetes and heart diseases. Although its exact cause is unknown, up to 10% of reproductive aged women suffer from PCOS.

Definition of PCOS:

PCOS is a condition of hormonal imbalance such as estrogen, progesterone, luteinizing hormone, follicular stimulating hormone, and androgen. Polycystic ovary syndrome (PCOS) is a condition in which women typically have a number of small cysts around the edge of their ovaries (polycystic ovaries). Polycystic ovaries are ovaries containing a large number of harmless cysts that are no

bigger than 8mm each. Normal ovaries have only about half this number of cysts.

Causes:

- The exact cause of polycystic ovary syndrome (PCOS) is unknown, but the following factors often lead to its development.
- Resistance to insulin, Weight gain, Hormone imbalance
- Raised levels of luteinizing hormone (LH), which is present in the pituitary gland to stimulate ovulation and hormone production in the ovaries.
- Raised levels of testosterone and other male sex hormones, which results in many of the symptoms of PCOS (all women produce testosterone, but normally in much lower levels than men).
- Reduced levels of follicle-stimulating hormone (FSH) and progesterone.
- A thyroid gland that does not function normally. The thyroid gland produces hormones that keep the metabolism functioning effectively. In PCOS, levels of these hormones may be lower than normal.
- Raised levels of prolactin (only in some women with PCOS). This hormone usually stimulates the breast glands to produce milk in pregnancy

Symptoms:

Many of the symptoms of PCOS are caused by high levels of androgens circulating in your body, causing 'hyperandrogenism'.



Fig 1: Symptoms of PCOS

Treatment:^[2]

Metformin (Fortamet, Glucophage):

- It lowers insulin levels. It can help with loss and may prevent you from getting type 2 diabetes. It may also make you more fertile.

Spirolactone (Aldactone):

If birth control doesn't stop hair growth after 6 months, your doctor may prescribe spironolactone (Aldactone). It lowers the level of a type of sex hormone called androgens. But you shouldn't take it if you're pregnant or plan to become pregnant, because it can cause birth defects.

- Combination birth control pills: Pills that contain estrogen and progestin decrease androgen production and regulate estrogen. Regulating your

hormones can lower your risk of endometrial cancer and correct abnormal bleeding, excess hair growth and acne. Instead of pills, you might use a skin patch or vaginal ring that contains a combination of estrogen and progestin.

Foods to be Included In Diet:^[3]

Lean protein, such as fish, anti-inflammatory foods and spices, such as turmeric and tomatoes, beans and lentils, almonds.

Foods to be Limited or Avoided:^[3]

Foods high in refined carbohydrates, such as white bread and muffins, Sugary snacks and drinks, inflammatory foods, such as processed and red meats, highly processed foods, white potatoes

Life Style Changes Which Plays A Key Role:

PCOS, like many disorders, responds positively to lifestyle choices.

Exercise:

This includes exercise and daily physical movement. Both can help to reduce insulin resistance. At least 150 minutes per week of exercise is ideal. Daily activity, low sugar intake, and a low-inflammation diet may also lead to weight loss. Women may experience improved ovulation with weight loss, so women who are obese or overweight and want to get pregnant may find physician-approved exercise especially important.

Stress Management:

It is well proven that stress alone can cause PCOD. Stress has very bad effects on metabolism. Stress alters quality of acid secreted to digest food. Food remains half-digested and spoils metabolism badly, enhancing PCOD. The symptoms associated with PCOS can cause stress, which can be managed by yoga and meditation.

Diagnosis of PCOS:^[4,5]

Transvaginalultrasound: There's no test to definitively diagnose PCOS. A physical exam will include checking for signs of excess hair growth, insulin resistance and acne.

Pelvicexam: The doctor visually and manually inspects your reproductive organs for masses, growths or other abnormalities.

Blood tests:

Your blood may be analyzed to measure hormone levels. This testing can exclude possible causes of menstrual abnormalities or androgen excess that mimics PCOS. Additional blood testing to measure glucose tolerance and fasting cholesterol and triglyceride levels.

An ultrasound:

Checks the appearance of your ovaries and the thickness of the lining of your uterus. Periodic checks of blood pressure, glucose tolerance, and cholesterol and triglyceride levels, screening for depression and anxiety, screening for obstructive sleep apnea

2. Recent Studies

AMH studies related to PCOS:^[6]

- Anti-Mullerian hormone (AMH), also known as Mullerian inhibiting substance, is a type of hormone secreted by an ovarian follicle as it matures. AMH levels are an important diagnostic measure as the

number of antral follicles found on the ovary each month.

- Antral follicles, also referred to resting follicles, are those are in the latter stage of development. Each has the potential to release an egg when fully mature.
- Doctors may evaluate AMH levels for several reasons. Among them, the actual number of follicles—referred to as the ovarian reserve—can give doctors an idea as to how successful in vitro fertilization (IVF) may be. The higher the antral follicle count, the higher the AMH levels.
- On the other hand, these very same measures can be a problem in women with polycystic ovary syndrome (PCOS). Women with PCOS will often a high number of antral follicles and, as a result, an equally high level of AMH in their blood.
- Too much AMH can actually stop ovulation from occurring. In a normal ovary, AMH works by preventing the premature development of a follicle and, in turn, the release of an immature egg during ovulation.
- In the same way that AMH can help predict the successful IVF procedure, it can help diagnose PCOS in women who may not have obvious signs of the syndrome.

AMH levels indicate:

- AMH levels can be measured with a simple blood test. The blood can be drawn on any day of the menstrual cycle and, thereafter, sent to the lab for analysis. When returned, the results can tell us if the AMH is high, low, or normal.
- High levels are above 5.0 ng/ml.
- Borderline high is between 3.5 ng/ml to 5.0 ng/ml.

- Normal is between 0.7ng/ml to 3.5ng/ml.
- Borderline low is between 0.3 ng/ml to 0.7 ng /ml.
- Low levels are below 0.3 ng/ml.
- A high level alone cannot diagnose PCOS since AMH levels typically decrease with age. As such, doctors will compare a woman’s age with the AMH results and use those to help make a diagnosis.

DHEA studies related to PCOS:

- DHEAS, or dehydroepiandrosterone sulfate, is a form of the androgenic hormone DHEA that has a sulfate molecule (one sulfur and four oxygen atoms) attached to it. Almost all of the DHEA circulating in the bloodstream is in the form of DHEAS.
- DHEAS is secreted by the adrenal glands and is the most abundant circulating steroid hormone in humans. It is converted into either estrogen or testosterone in the body.
- In women, moderately high levels of DHEAS can cause symptoms of hyperandrogenism, the primary symptom of PCOS. The elevations of the hormone may indicate androgen producing adrenal tumors.
- Since DHEAS levels naturally decline with age, some women take DHEA supplements, which are purported to reduce signs of aging, improve bone density, ease depression and improve libido.
- Several drugs like clomipramine, imipramine, and phenytoin), many statins, dopaminergic drugs (such as levodopa/dopamine and bromocriptine), fish oil, and vitamin E may reduce DHEAS levels.
- Drugs that may increase DHEAS levels include metformin, troglitazone, prolactin, danazol, calcium channel blockers, and nicotine.

Table 1: Survey conducted on PCOS patients

Subject	Life style Changes	Food Habits	Sufferings	medications	improvement
Subject 1	Yoga	including fiber containing foods	Acne and Irregular periods, Hair loss	Oral contraceptives	YES
Subject 2	Yoga and Regular exercise	Avoiding fatty foods and including green leafy vegetables in diet	Irregular periods with pain AND ACNE	Metformin	yes
Subject 3	A walk in the early morning	Controlled diet, avoiding intake of quantity of rice	Hirsutism Hair loss and red pigmentation on back	Ethinyl estradiol	Mild improvement
Subject 4	Regular exercise	Timely diet	Acne, irregular cycles	Ethinyl estradiol	yes
Subject 5	Irregular food timings, circadian rhythm	Having plenty of junk food	Black patch on back	Aldactone, Glucophage	no

3. Conclusion

Based on the survey results one can identify the suffering of PCOS based on the early signs and symptoms and can have a control with changes in dietary habits as well as life styles. Severity of the sufferings can be controlled by taking proper

precautions. Women should have awareness about PCOS. There is no cure for PCOS. But it can be prevented.

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