



A "Pcos : A Review Of Its Digonestic Criteria, Evaluation, Pathophysiology, Treatment, Diagnosis And Clinical Features".

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Abstract Polycystic Ovary Syndrome(PCOS) ia a choronic complex and the most commen endocrine disorder observed in women of reproductive age. The reasearch been carried out on the effect of some bio-chemical parameters on women with polycystic ovaries. Polycystic Ovary Syndrome attending the department of Biotechnology.

There are medicines which can induce an artificial menstrual cycle and the regular level of harmones and ultimately treat the three sign of PCOS. i.e- Acne , Hirsutism, obesity.

Keywords

Polycystic Ovary Syndrome ; PCOS hyperandrogenism, Homocystine.

Introduction

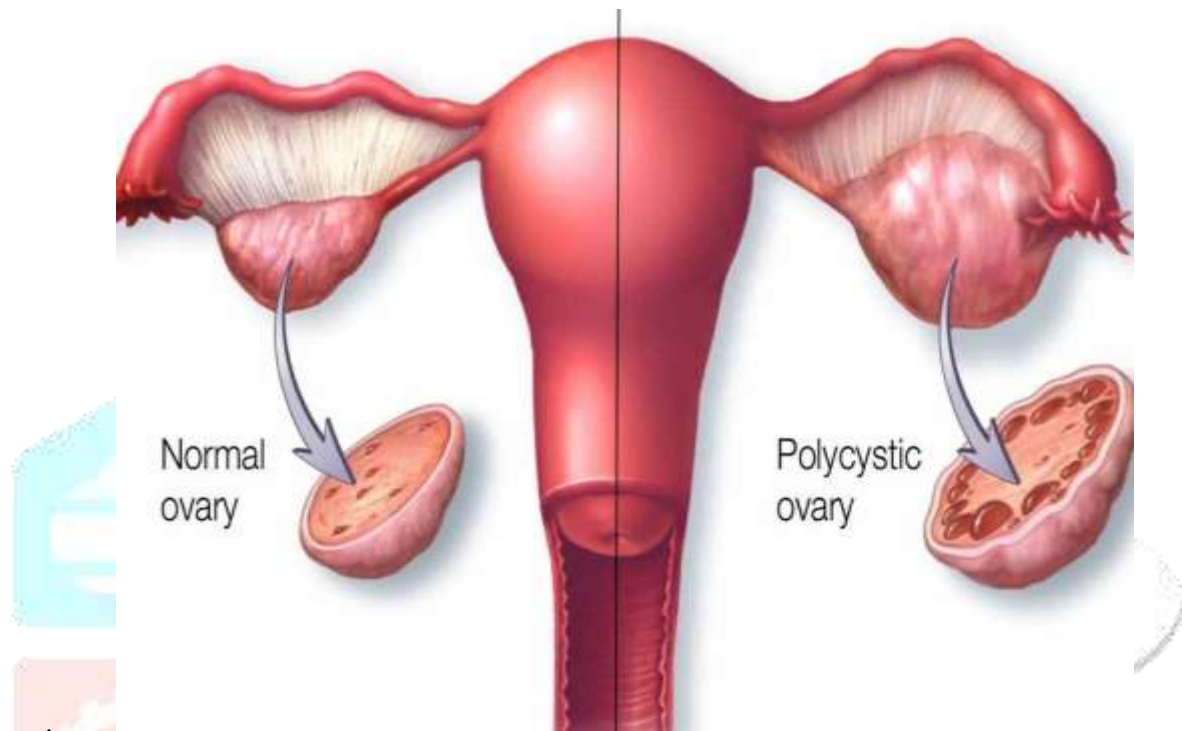
Polycystic Ovary Syndrome (PCOS)is a chronic complex endocrine disorder that occurs mostly in women of reproductive age and affect young adult up to 70% of infected women remain undiagnosed or have a long delay before the disease is detected it is usually estimated to be between 0 and 20 % depending on the definitior and the study population

The nature of this disease is a variable combination of sympots of androgen excess and ovarine failure in the absence of other specific symptoms.

Normal ovulating ovaries contain full-fill sacs called follicle with variation is in size from 1 to 2millimeters which depends on the phase of the menstrual cycle the individual sacs or follicle contain a tiny egg , which never matures enough trigger ovulation will in the polycystic ovary there are more than 12 small follicles measuring 2 to 9 millimeters in diameter and are usally arranged in a peurl necklace manner around the periphery This is an important policy health and issue however the health problems associated with PCOS are beyond the control of these condition and may extend from the reproductive years through menopause and byond [1]

In recent years, the link between PCOS and the microbiome has been established, and it is believed to have contributed to the establishment of the syndrome. Dysbiosis of the gut microbial community, caused by environmental risk factors, might be a potential pathogenic factor in the development and progression of PCOS. Different pathogenic aspects of PCOS are caused by different microbiota, and essential routes linking their involvement in the onset of various clinical manifestations of PCOS bring up new therapy options for the condition .

Prebiotics, probiotics, synbiotics, and fecal microbiota transplants (FMTs) help manage the variety of phenotypes associated with PCOS by boosting eubiosis and reducing the impact of altered microbial profiles. Microbiota-mediated therapies might improve the metabolic, inflammatory, and hormonal characteristics of PCOS women.



History

Although Stein and Leventhal are regarded as the first investigators of polycystic ovary syndrome (PCOS). It was Valisneri and an Italian

medical scientist, physician & not- urologist who in 1721 described married infertile women with shiny ovaries with a white surface & the size of pigeon eggs.

- It was Valisneri an Italian medical scientist physician & not – urologist & in 1721.

PCOS can be diagnosed by taking medical history.

You can get pregnant with PCOS.

Diagnostic Criteria & Its Evaluation

Due to the complexity of this disorder and various controversies, different diagnosis criteria have been proposed over the last three decades. Polycystic ovary syndrome (PCOS) was first described by Stein & Leventhal in 1953 as a syndrome of oligomenorrhea & polycystic ovaries that was variable accompanied by hirsutism, Acne & obesity.[3]

PCOS is often diagnosed in young age although there are three known criteria for the diagnosis of polycystic ovary syndrome. There is interpretation in a young person; it is difficult. Polycystic ovary disease is not very easy to diagnose in young people because the criteria for this purpose are not sufficient there for clinical and biological evidence of persistence of hyperandrogenism & oligomenorrhea is necessary especially if you persist for more than two years after menstruation. There are now diagnostic criteria for postmenopausal women. In these cases, if there is a history of oligomenorrhea & hyperandrogenism during pregnancy, the diagnosis of polycystic ovary syndrome can be determined [2]

Evaluation of PCOS

- Irregular periods
- Higher levels of androgen (male hormones) shown in blood tests or through symptoms like acne, male-pattern balding, or extra hair growth on your face, chin, or body
- Cysts in your ovaries as shown in an ultrasound exam.

Diagnosis of PCOS

You might then be given a blood glucose and cholesterol test if you have PCOS. Physicians frequently do these tests to assess your general health and likelihood of developing further conditions:

Lipid profiles checks your cholesterol and triglycerides. PCOS can make you more likely to develop heart disease.

Glucose test helps to see if you have diabetes. More than half of women who have PCOS get this disease.

Insulin: Your doctor will want to find out how well your body responds to insulin, which helps control your blood sugar level. If your body doesn't respond to the insulin it's making, you may have insulin resistance. It's common among women with PCOS and can lead to diabetes.

Diagnostics Criteria for PCOS

Adult Diagnosed criteria (Rotterdam)(4)

- phenotype 1 (classic PCOS) ;

Clinical & biochemical evidence of hyperandrogenism

Evidence of oligo-anovulation

ultra sonographic evidence of a polycystic ovary

- Phenotype2 (EssentialNIH Criteria)

clinical & Biochemical evidence of a polycystic ovary

Evidence of oligo-anovulation

- Phenotype 4 (non hyper androgenic PCOS) a) clinical & biochemical evidence hyperandrogenism b) ultrasonography evidence of a polycystic ovary Phenotype 4 (nonhyperandrogenic PCOS) Evidence of oligo-anovulation

Ultrasonographic evidence of a polycystic ovary

Adolescent diagnostic criteria

Otherwise unexplained combination of:

1. Abnormal uterine bleeding pattern

a) Abnormal for age or gynecologic age

Evidence of hyperandrogenism

Persistent testosterone elevation above adult norms in a reliable reference laboratory is the best evidence

Moderate-severe hirsutism is clinical evidence of hyperandrogenism[4]

Careful clinical assessment including a meticulous history, thorough physical examination, and appropriate laboratory evaluation are mandatory for diagnosis.

According to the best clinical practices guideline of 2015 by American Association of Clinical Endocrinologists (AACE) and the Androgen Excess and PCOS Society (AES), free testosterone levels are more sensitive than the measurement of total testosterone for establishing hyperandrogenism and should be ideally determined through equilibrium dialysis techniques.

Value of measuring levels of androgens other than testosterone in patients with PCOS is relatively low.

New ultrasound machines allow diagnosis of PCOM in patients having at least 25 small follicles (2 to 9 mm) in the whole ovary and ovarian size of 10 mL remains the threshold between normal and increased ovary size.

They have also mentioned that serum 17-hydroxyprogesterone and anti-Müllerian hormone (AMH) may be useful to determine a diagnosis of PCOS. [11]

Pathophysiology

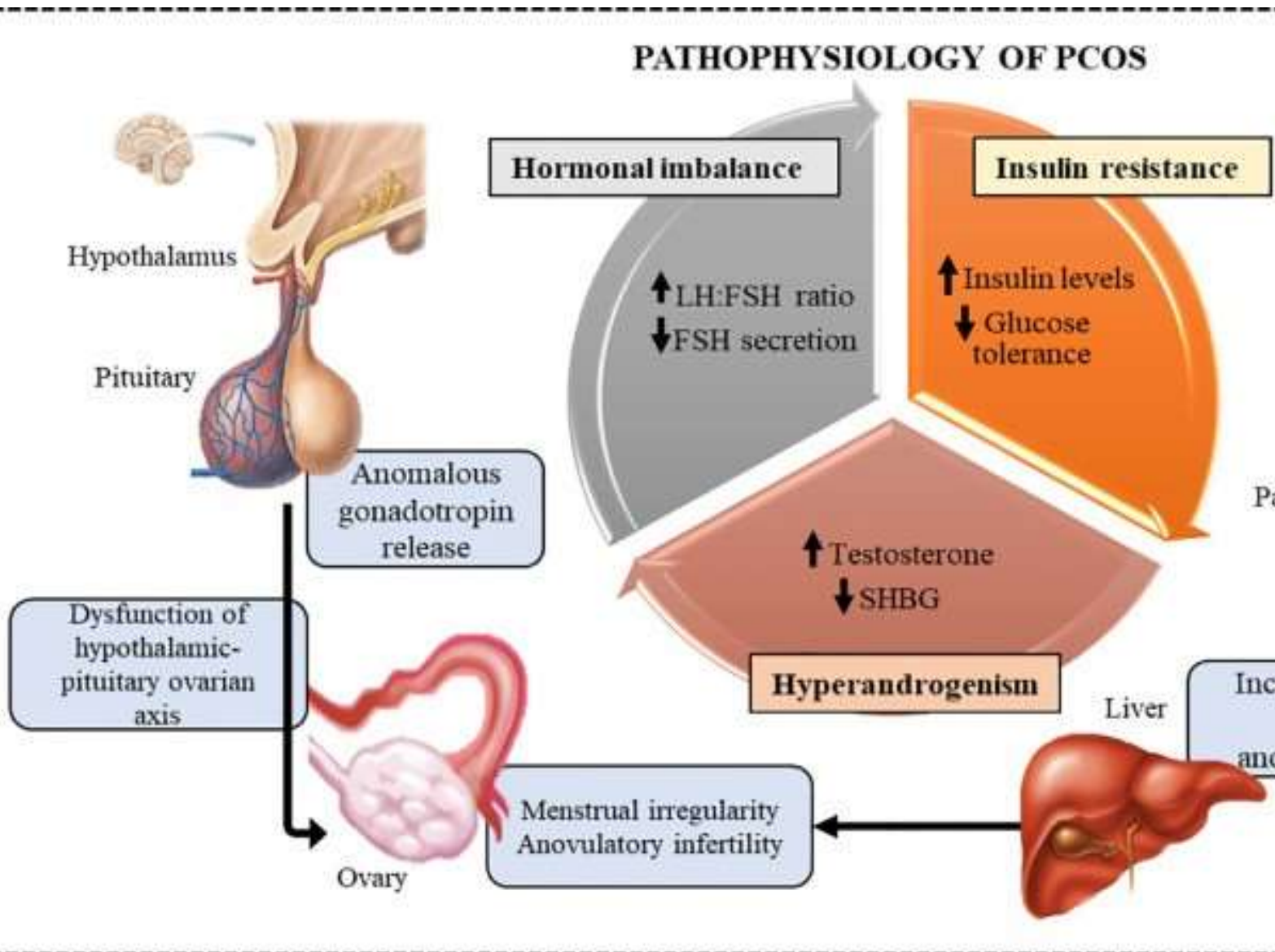
As mentioned above, the fundamental pathophysiological defect concerning PCOS is not known, but some of the important features include resistance to insulin, excess production of androgen, and transformed gonadotropin dynamics [5] Organs that are affected by PCOS are a woman's ovaries, it is the reproductive organ through which estrogen and progesterone hormones are produced and ultimately menstrual cycle is regulated.

It is a myth that women do not need for male hormones but the fact is ovaries produce a negotiable amount of male hormones that we call as androgens.

In PCOD, there are elevated levels of Luteinizing Hormone, which is three times higher than Follicle Stimulating Hormone, which ultimately leads to increased production of testosterone by the ovaries leading to the growth of facial hair and acne [5]

PCOS develops during the early pubertal years . However, most relevant information has been accrued through clinical studies involving adult women in which referral bias focuses on investigation of the more severe phenotypes . Preclinical models involving animal and in vitro studies supplement clinical investigation and benefit from other approaches to study this complex disorder. Recent clinical, experimental, and genetic data emphasize neuroendocrine involvement in the pathophysiology of PCOS.

By the time the diagnosis is established, PCOS presents as a phenotype reflecting a self-perpetuating vicious cycle involving neuroendocrine, metabolic, and ovarian dysfunction. Over the years, numerous hypotheses have been proposed regarding the proximate physiologic origins for PCOS. PCOS reflects the interactions among multiple proteins and genes influenced by epigenetic and environmental factors . Specific sections of this article deconstruct the factors contributing to the development of PCOS in humans and preclinical models. Clinical and biochemical hyperandrogenism are major features of PCOS.

Pathophysiology***Treatment***

There are many views regarding the treatment of PCOS, some say it cannot be treated as it is a life-long disorder and some concluded that having a change in lifestyle and having hormonal treatment can work well with PCOS. Consequences related to health concerning PCOS are diverse and may include non-functioning or dysfunction of certain organs, so it is the utmost thing to get treated off this disorder and have a stress-free life. If a woman is obese, she may have a deficiency of vitamin-D, because obesity is directly linked with a decrease in the level of vitamin-D and that person may likely get osteoporosis or rickets. Thus, the very first step in the treatment changes in lifestyle. There are certain lifestyle management strategies, which work well in PCOS:

Prevent getting obese or being over-weight (having weight management)

Modification in dietary routine by having a low carbohydrate diet

Regular physical activity or regular exercise

Modification in behavior

Stress-free lifestyle

Reduce the intake of fast food

Reduce intake of processed food

Reduce the intake of alcoholic beverages

Regular check on vitamin-D level [6]

Diagnosis

Since PCOS is a syndrome and cannot be diagnosed by single diagnostic criteria, it is identified by any two out of the following three clinical criteria, because women having PCOD may have:

Oligomenorrhoea (irregular or prolonged menstrual cycles)

Hyperandrogenism (excessive production of androgens)

The polycystic appearance of the ovaries (multiple follicles in the ovary) Oligomenorrhoea is a condition when there is a skip of more than 3 menstrual cycles or we can say that irregular menstrual cycle. There are several blood tests, which are done to check the menstrual irregularities and these are level of Luteinising Hormone (LH), Follicle Stimulating Hormone (FSH), TSH, and Prolactin, which is known as PCOD panel as all these laboratory tests are done under PCOD Panel. Hyperandrogenism is when there is excess production of androgens, which is exposed by acne, oily skin, and excess hair on the face, chest, and stomach. While in some cases, women face hair thinning and baldness, but it could be a sign of underactive thyroid, malnutrition, iron or zinc deficiency, stress, sickness or a problem of PCOS also. Polycystic ovaries mean when there are several present small sized follicles around the periphery or near the ovarian surface which is diagnosed by ultrasonography. If there is a reverse ratio of FSH: LH (3:1), then it may be PCOD [10]

Clinical Features

Polycystic ovary syndrome is characterized by a combination of oligo/amenorrhoea, clinical or endocrine signs of hyperandrogenaemia and polycystic ovaries.

The most common abnormalities associated with PCOS include menstrual disorders (amenorrhoea or oligomenorrhoea), often leading to infertility (in 73-75% of the cases), abdominal obesity (30-70%) and type 2 diabetes (approximately 10%) Clinical Features Polycystic ovary syndrome is characterized by a combination of oligo/amenorrhoea, clinical or endocrine signs of hyperandrogenaemia and polycystic ovaries.

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Abnormality	- Frequency
Infertility	- 73–75%
Hirsutism	- 85–90%
Metabolic syndrome:	- 40%
Abdominal obesity	- 30–70%
Diabetes type 2	- 10%
Arterial hypertension	- 20%
Disturbed lipid metabolism	- Unavailable

Recent medicines used in regulating PCOS:

Certain medicines are used globally to regulate PCOS and the first line of pills that are used to prevent hirsutism, acne, and irregular menstrual periods are oral contraceptives. Oral contraceptives are the pills, which are appropriately composed of hormones and they start an artificial menstrual cycle in women so as she can get a withdrawal bleeding.

Contraceptive Pills come in a pack of active tablets, and some then have seven days of inactive tablets as a reminder to have a seven-day break from the medication.

These pills also possess good treatment for excess hair and acne because they contain a small dose of male hormone blockers. These pills result in very low levels of free testosterone in the body. While having these pills, one cannot get pregnant. [7]

In the market, there are many brands of the pills available and these are

Diane-35 (contain a small amount of synthetic progestin, CPA)

Yasmin (contain a small amount of synthetic progestin)

Marvelon

Femoden-ED

Microgynon

Recent advances in the management of pcos

PCOS appears to be a heterogeneous condition and whose initial management of diagnosis of PCOS or PCOD will depend on the clinical problems (anovulation or hirsutism). Hirsutism: The backbone of managing PCOS largely depends on hair removal techniques.

In some cases, this may still be the choice of treatment if fertility is sought. In the 1960s, antiandrogen therapy was introduced in which spironolactone, cyproterone acetate, and more recently flutamide are successfully used in treating symptoms of hyperandrogenism, which also includes acne.

To induce regular withdrawal of bleeding in patients having PCOS, antiandrogens are usually prescribed with a low-dose oral contraceptive.

Anovulation: In 1958, the first human pituitary FSH was used to induce ovulation in anovulatory women but it was stopped afterward because it was causing severe complication rates to both fetus and mother. [8]

Afterward, in 1961, Greenblatt and his associates stated positive induction of ovulation using clomiphene citrate, which is chemically related to the non-steroidal estrogen chlorotrianisene. After several approaches like the introduction of GnRH analogs were developed but all of them possess serious problems.

Remedies

Lifestyle modification

Dietary changes

Insulin-lowering drugs

Oral contraceptives

Weight loss • Progestin therap

Conclusion

PCOD or PCOS is a reproductive disorder in which women's ovary gets enlarged and starts producing an excessive amount of male hormones (androgens) and is the main cause of infertility, diabetes, irregularity in menstrual periods, 106 Archives of Pharmacy Practice.

Stress is one of the primary causes of PCOS, which can ultimately lead to hypertension, diabetes mellitus, increased risk of uterine cancer, and even cardiovascular diseases.

Diagnostic criteria of the disease are having two out of the following symptoms: Hyperandrogenism, Oligomenorrhoea, or Polycystic appearance of the ovaries.

Infertility, menstrual disturbances, and acne can be prevented by taking oral contraceptives, insulin lowering drugs, progestin therapy, and weight loss.[9]

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